

**PHASE II ENVIRONMENTAL SITE ASSESSMENT
FOR THE
BARNUM ORCHARD
DENVER, DENVER COUNTY, COLORADO**

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
1595 Wynkoop St.
Denver, CO 80202

and

DENVER URBAN GARDENS
1031 33rd Street, Suite 100
Denver, Colorado 80205

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LIST OF ACRONYMS

ASTM	American Society for Testing and Materials
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
DDT	dichlorodiphenyltrichloroethane
DUG	Denver Urban Gardens
EDR	Environmental Data Resources
EP	Environmental Professional
EPA	United States Environmental Protection Agency
ERT	Environmental Response Team
ESA	Environmental Site Assessment
ID	identification
in	inch
mg/kg	milligram per kilogram
M.S.	Master of Science
PAH	polycyclic aromatic hydrocarbons
P.G.	Professional Geologist
PPE	personal protective equipment
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RSL	regional screening level
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
START	Superfund Technical Assessment and Response Team
SVOC	Semi-volatile Organic Compound
TBA	Targeted Brownfields Assessment
TAL	Target Analyte List
TBA	Targeted Brownfields Assessment
TDD	Technical Direction Document
VOC	Volatile Organic Compound
WESTON	Weston Solutions, Inc.

SUMMARY

The United States Environmental Protection Agency (EPA) tasked the Weston Solutions, Inc. (WESTON) Superfund Technical Assessment and Response Team (START) to assist the EPA in conducting a Phase II Environmental Site Assessment (ESA) for the proposed orchard, located at 101 King St., Denver, Denver County, Colorado (Figure 1). Denver Urban Gardens (DUG) requested the Phase II ESA through EPA's Targeted Brownfields Assessment program to facilitate the redevelopment of the vacant parcel into a community orchard. The property is owned by the City and County of Denver.

SCOPE OF WORK

The Phase II ESA was conducted in accordance with Technical Direction Document (TDD) 0003/1508-03 and *American Society for Testing and Materials (ASTM) International – Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process E1903-11* to achieve the objectives set forth in the Statement of Objectives (*Objectives*) developed by the user(s) and the Phase II Assessor. The *Objectives* developed for this Site are presented as follows:

- Assess and evaluate potential impacts to both surface soil and subsurface soil by suspected contaminants including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Target Analyte List (TAL) metals, and pesticides that are potentially present at the property;
- Assess and evaluate potential impacts to both surface soil and subsurface soil by pH values that can impact soil nutrients for gardening at the property;
- Develop sufficient information to reasonably render a professional opinion that, with respect to the potential contamination, a community orchard and garden are a suitable reuse for the property.
- Gather and provide sufficient data to assist the Targeted Brownfields Assessment (TBA) recipients in making informed decisions with regard to the future use of the property.

Phase II ESA

The Phase II Environmental Site Assessment (ESA) included sampling to characterize surface (0 inches [in] to 2 in below ground surface [bgs]) and subsurface soil (greater than 2 in bgs) at the Site (Figures 1 and 2). A total of 14 (including two duplicate) composite samples were collected to characterize the surface and subsurface soils at the site. These samples consisted of soil samples collected from three different depths (0 in to 2 in bgs, 2 in to 6 in bgs, and 6 in to 18 in bgs). Each sample was collected via disturbing the soil with a decontaminated stainless steel hand auger, using a disposable scoop to add each aliquot to a plastic bag for homogenization. Each composite sample was comprised of an aliquot collected from each of the locations at the measured depth and was

TDD 0003/1508-03

homogenized in a one-gallon bag prior to being placed in a sampling container. Ten composite samples were analyzed for pesticides, pH, and TAL Metals (aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc). Four additional composite surface soil samples were also analyzed for polycyclic aromatic hydrocarbons (PAHs).

A total of five grab samples were collected from 0-2 in using a disposable scoop and each sample was placed directly into a sample container. The grab samples were analyzed for VOCs and SVOCs. The soil sample details are outlined below in Table 1 and Appendix C shows the future orchard design.

Analytical results are presented in Section 4 and Table 2 and 3. The results of the Phase II ESA conducted include the following:

- Pesticides
 - Alpha-Chlordane, 4,4-DDE, 4,4-DDT, Dieldrin, Gamma-Chlordane, and Heptachlor Epoxide were detected in the surface and/or subsurface increments of one or more samples collected, but did not exceed the EPA Regional Screening Levels (RSL) for Residential Soil.
- Metals
 - Arsenic was found to exceed the EPA RSL for residential soil in all samples analyzed for metals. Thallium was found to exceed the EPA RSL for residential soil in eight surface and subsurface samples and one duplicate.
 - All other metals analyzed were not detected or the reported concentrations did not exceed the EPA RSL for Residential Soil.
- VOCs/SVOCs
 - Benzo(b)fluoranthene, was found to exceed the EPA RSL for residential soil in two samples and one duplicate. Dibenzo(a,h)anthracene, was found to exceed the EPA RSL for residential soil in one sample. The laboratory reporting limits for Benzo(a)pyrene were above the EPA RSL for residential soil, however, the analyte was not detected in any of the samples analyzed for SVOCs, except for the sample BO-SO-18-00-02.
 - All other VOCs/SVOCs analyzed were not detected or the reported concentrations did not exceed the EPA RSL for Residential Soil.
- pH
 - pH of the soil on site was found to vary from 7.37 to 8.13.

Deborah McKean, PhD, EPA Toxicologist reviewed the analytical data and provided the following determination (see Appendix A for the signed version):

Introduction:

The purpose of this assessment is to assess laboratory analysis results for presence of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, and Target Analyte List (TAL) metals in soil samples collected at the Site. This assessment evaluates the detected analytes thru a comparison to risk-based Regional Screening Levels (RSLs) for residential land use and literature data on anthropogenic levels of compounds found in the urban environment. The RSLs for soil are based on conservative exposure assumptions of a 30 year duration and 24 hours per day and include ingestion, inhalation and dermal exposure pathways. Although RSLs do not directly evaluate ingestion of fruits and vegetables grown in this soil, the conservative nature of the RSLs are thought to subsume the fruit and vegetable ingestion pathways. These comparisons will be the basis for the determination of suitability of this site as an urban garden.

Analytical Analysis Results

The results highlighted in blue in the attached Tables 2 and 3 are those that exceed RSLs for residential land use.

VOCs

No exceedances of RSLs were observed in any of the soil samples.

SVOCs

Exceedances of residential RSLs were observed for several polycyclic aromatic hydrocarbons (PAHs) in several samples. Those PAHs exceeding residential RSLs include: benzo-a-anthracene, benzo-b-flouranthene, benzo-a-pyrene, and dibenzo(a,h)anthracene. It should be noted that PAHs, are often found at elevated levels in urban environments. Although exceedances are noted, the levels detected do not result in exposures and risk above EPA's target risk range. PAHs are found products of incomplete combustion of gasoline, oil, and coal, in asphalt, and as a result of forest fires. PAHs bind very tightly to soil and are not taken up into plant material.

Pesticides

No exceedances of RSLs were observed in any of the soil samples.

TAL Metals

Arsenic and thallium were found to exceed residential RSLs in a number of soil samples. Although exceeding residential RSLs, arsenic and thallium levels detected are within the range of concentrations typically found in the Denver area as reported by the United States Geological Society (<http://pubs.usgs.gov/of/2014/1082/pdf/ofr2014-1082.pdf>).

Conclusion:

Soil concentrations of PAHs, arsenic and thallium found to exceed residential RSL but are within the range of concentrations typically found in the Denver area. Although risk from direct exposure to soil is minimal compared with other Denver urban soils, it is recommended that soils are amended to lessen the levels of PAHs, arsenic and thallium that have been detected. Therefore, the following recommendations may be considered when developing and maintaining gardening areas:

- Amend soil with compost and/or commercial topsoil and adjust pH for optimal growing conditions. Amendment for most gardening areas to one foot is sufficient for plants with shallow root systems. Raised beds using non-site soils can also be considered. Amendment to greater depths over larger areas will be helpful in areas intended for fruit trees since root systems will extend to areas equal to the tree canopy upon tree maturity.
- Cover soil and walkways not used for growing purposes with mulch, geotextiles, or gravel.
- Use Best Management Practices to limit exposure to bare soil, such as those listed in http://www.epa.gov/sites/production/files/2015-09/documents/bf_urban_ag.pdf.

This summary section is intended to be a general description of the environmental conditions, summary of results, conclusions, and recommendations identified as a result of the Phase II ESA of the Site conducted by START. However, this section is not intended to be a “stand alone” document or to include the basis of all conclusions presented. The report should be read and used in its entirety. Information included in this section is subject to the scope of services and limitations noted in the original TDD and the complete report.

1.0 INTRODUCTION

1.1 SCOPE OF WORK AND PURPOSE

The Weston Solutions, Inc. (WESTON) Superfund Technical Assessment and Response Team (START) conducted a Phase II Environmental Site Assessment (ESA) for the proposed orchard, located at 101 King St., Denver, Denver County, Colorado (the “Site”) (Figure 1). Denver Urban Gardens requested the Phase II ESA through EPA’s Targeted Brownfields Assessment program to facilitate the redevelopment of the vacant parcel into a community orchard. The property is owned by the City and County of Denver.

The ESA was conducted in accordance with Technical Direction Document (TDD) 0003/1508-03 and *American Society for Testing and Materials (ASTM) International – Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process E1903-11*. The purpose of an ESA is to acquire and evaluate information sufficient to achieve the objectives set forth in the *Statement of Objectives (Objectives)* developed by the user(s) and the Phase II Assessor to acquire and evaluate sufficient information to determine the extent, location and concentration of potential environmental for the proposed community garden. The *Objectives* developed for this Site are presented in Section 1.2.

This Phase II assessment report contains the results of the data collection activities and associated quality assurance/quality control (QA/QC) measures conducted. Information used to conduct this Phase II ESA was based upon reasonably ascertainable, visually and physically observable conditions, and included testing or sampling of materials. This structure of this report is based on the ASTM E1903-11 standard.

1.2 STATEMENT OF OBJECTIVES

The *Objectives* were developed by Denver Urban Gardens (DUG), the City and County of Denver and the Barnum Community Garden Group (users), START (Phase II Assessor), and the United States Environmental Protection Agency (EPA) to obtain sound, scientifically valid data concerning the presence or the likely presence of hazardous substances. The specific objectives for this Phase II ESA are as follows:

- Assess and evaluate potential impacts to both surface soil and subsurface soil by suspected contaminants including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Target Analyte List (TAL) metals, and pesticides that are potentially present at the property;
- Assess and evaluate potential impacts to both surface soil and subsurface soil by pH values that can impact soil nutrients for gardening at the property;

- Develop sufficient information to reasonably render a professional opinion that, with respect to the potential contamination, a community orchard and garden are a suitable reuse for the property.
- Gather and provide sufficient data to assist the Targeted Brownfields Assessment (TBA) recipients in making informed decisions with regard to the future use of the property.

1.3 SUMMARY OF BACKGROUND INFORMATION

Denver Urban Gardens (DUG) is assisting the City and County of Denver and the Barnum Community Garden group with the orchard. The property is owned by the City and County of Denver and has been vacant for many years. There is an existing community garden to the east and the plan is to connect the two properties. In the TBA application (Appendix C), DUG wrote, “Barnum Orchard will be a fruit orchard and berry garden for the Barnum neighborhood community. It is located adjacent to the Lowell Street Community Garden, a well-established food-producing DUG site that was established in 1997. The garden will be filled with apple, peach, plum, cherry and pear trees, with raspberries, strawberries, blackberries, and blueberries growing beneath the trees, all grown by volunteers and open to the community to eat and harvest. Produce not taken by the community will be harvested and donated to food banks. Future plans could include education workshops taught at the garden site by Master Gardeners to show how to grow similar trees and plants in home gardens. The site has been vacant since the City of Denver Parks and Recreation acquired it in the 1930’s, and potentially beforehand as well, however that is not confirmed. The open channel of Weir Gulch ran right down the middle of the property. At some point, the open channel was completely covered/filled-in over a storm sewer pipe system. The fill dirt is from unknown origins.”

1.3.1 Previous Environmental Reports and Records

No previous environmental reports and/or records were obtained by START.

2.0 DESCRIPTION OF WORK PERFORMED AND RATIONALE

2.1 SOIL SAMPLING

This section summarizes the Phase II ESA work performed and rationale conducted to meet the *Objectives* developed for the investigation as documented in the approved Sampling and Analysis Plan (SAP) for the Site (START, 2015). Deviations from the approved SAP for this Phase II ESA are presented in Section 2.2.

Based upon the *Objectives* developed for the Site, soils were the only media investigated as part of this Phase II ESA. The investigation of surface and subsurface soils included sample collection for laboratory analysis. For purposes of this characterization, surface soils were defined as a depth range of 0 to 2 inch (in) below ground surface (bgs) and subsurface soils were defined as a depth greater than 2 in bgs. Details of the investigative work performed and rationale are presented below.

2.2 DEVIATIONS FROM THE SAMPLING AND ANALYSIS PLAN

Due to a discrepancy in different worksheets of the SAP, SVOC analysis was only performed on grab samples collected at the subject property during the original sampling event. As a result, a second round of four (including one duplicate) composite samples were collected from the surface soils for analysis of polycyclic aromatic hydrocarbons (PAHs). Results from both sampling events are included in this report.

3.0 METHODS USED

3.1 COMPOSITE SOIL SAMPLING

Composite sampling protocol produced a single sample from each depth interval from each area (Figure 2), consisting of multiple aliquots from within the area that have concentrations representative of the entire sampling unit. This sampling method reduces the number of samples to be analyzed as compared with traditional discrete sampling methods. Composite sampling is appropriate for sampling of the orchard to characterize the larger area of the site for contaminants of concern (COCs) in a cost-effective manner. Sample descriptions are provided in Table 1.

The composite samples were collected from three sample depths (0 in to 2 in bgs., 2 in to 6 in bgs., and 6 in to 18 in bgs.) from each of the three sampling areas (Figure 2) via disposable plastic scoop and hand auger. Each sample aliquot from the sample depth interval was composited in a one-gallon plastic bag for homogenization. A sample was then collected from the bag and placed into the sample jars. Decontamination of the hand auger between each sample interval and each section was conducted following the procedures described in the approved SAP and ERT SOP #2006. Photographs of the sample locations are provided as Appendix B. Samples were collected by START personnel in level D personal protective equipment (PPE) appropriate to the hazards presented. All of the discrete soil samples collected followed the methods described in the project SAP. Appendix C shows the future orchard design.

3.2 SOIL GRAB SAMPLING

Five discrete grab surface soil samples including one duplicate were collected from 0 in to 2 in bgs using a disposable plastic scoop to access the material at the locations shown in Figure 2. The samples were then placed directly into the samples containers. Sample descriptions are provided in Table 1. Photographs of the sample locations are provided as Appendix B.

Soil samples were collected by START personnel in level D PPE appropriate to the hazards presented. All of the discrete soil samples collected followed the methods described in the project SAP.

3.3 SOIL SAMPLE NOMENCLATURE

The environmental investigation soil samples collected during the Phase II ESA investigation were labeled with sample identification (ID) numbers. The sample ID numbers were recorded in the site notes and on the chain-of-custody in accordance with SOPs.

Sample IDs were uniquely composed with five components: the Site ID, sample type, and sample interval. An example of the sample nomenclature used during the inspection is provided below:

[__] [__] [__] [__] [__]
1 2 3 4 5

Component 1 – Defines the Installation Identification:

BO = Barnum Orchard

Component 2 – Defines sample type:

SO = Soil

Component 3 – Indicates the sample number (two digits)

03 = the third sample collected

Component 4 – Indicates the depth at the top of the soil sample core

06= 06 inches bgs (Composite samples only)

Component 5 – Indicates the depth at the bottom of the soil sample core

18= 18 inches bgs (Composite samples only)

An example of a sample number is BO-SO-03-06-18. This identifies the sample as the third soil sample taken from the 6-18 in interval at the Barnum Orchard.

3.4 LABORATORY ANALYTICAL METHODS

Samples were analyzed using EPA Method 8081A for pesticides, EPA Method 9045 for pH, EPA Method 6010B for TAL Metals (EPA Method 7471 for Mercury), EPA Method 8260 for VOCs and EPA Method 8270 for SVOCs/PAHs.

3.5 QUALITY ASSURANCE/QUALITY CONTROL

Three field duplicate samples were collected to verify data quality (Table 1). Two matrix spike/matrix spike duplicate (MS/MSD) samples were collected. Analytical data received was verified and validated by START to EPA Stage 1 Validation standards as described in *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009).

4.0 PRESENTATION AND EVALUATION OF INFORMATION, DATA, AND RESULTS

The evaluation and interpretation of the information, data, and results for the Phase II ESA are presented below. This section summarizes the laboratory results to identify the location and extent of contamination. Sample locations and sample depths are presented in Figure 2. Laboratory results for the samples collected are presented in Tables 2 and 3.

4.1 COMPOSITE SOIL SAMPLING

A total of 14 (including two duplicates) composite samples were collected from the Site. Photographs of the sample locations are provided as Appendix B. Composite samples BO-SO-01-00-02, BO-SO-02-02-06, BO-SO-03-06-18, BO-SO-04-00-02, BO-SO-05-02-06, BO-SO-06-06-18, BO-SO-07-00-02, BO-SO-08-02-06, BO-SO-09-06-18, and BO-SO-10-02-06 were analyzed for pesticides, pH, and TAL Metals (aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc). Composite samples BO-SO-16-00-02, BO-SO-17-00-02, BO-SO-18-00-02, and BO-SO-19-00-02 were analyzed for PAHs.

4.2 GRAB SOIL SAMPLING

A total of 5 grab samples (including one duplicate) were collected from the drain area at the Site. Photographs of the sample locations are provided as Appendix B. Grab samples were analyzed for VOCs and SVOCs.

4.3 INTERPRETATION OF RESULTS

The analytical results of the soil samples collected were compared to the EPA Residential Regional Screening Levels (RSLs) (Table 2 and 3). Laboratory data reports are presented in Appendix D. The following is a summary of detected analytical results that exceed the human health benchmarks.

4.3.1 Composite Soil Samples

The analytical results of the composite samples collected from the proposed orchard indicate elevated levels of arsenic and thallium exceeding the EPA RSLs for Residential Soil. Additionally, the pesticides Alpha Chlordane, Gamma Chlordane, Heptachlor epoxide, DDE, DDT, and Dieldrin were detected but did not exceed the EPA RSLs for Residential Soil in any of the samples collected. The pH for the soils on site were reported ranging from 7.37 to 8.13. All other metals and pesticides did not exceed the EPA RSL for Residential Soil or were not detected.

4.3.2 Grab Soil Samples

The analytical results of the grab samples collected from the proposed orchard indicate elevated levels of benzo(b)fluoranthene, benzo(a)pyrene, and dibenzo(a,h)anthracene exceeding the EPA RSLs for Residential Soil. Additionally, acetone, styrene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(k)fluoranthene, benzo(g,h,i)perylene, butyl benzyl phthalate, chrysene, bis(2-ethylhexyl)phthalate, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene were detected but did not exceed the EPA RSLs for Residential Soil in any of the samples collected. All other VOCs and SVOCs did not exceed the EPA RSL for Residential Soil or were not detected.

4.4 CONCEPTUAL SITE MODEL

4.4.1 Presence and Level of Concern Posed by Target Analytes

Per ASTM E1903-11 (Section 6.4.6), validation of the conceptual site model is conducted by evaluating testing results and other investigation findings to determine whether available information is sufficient to support sound conclusions regarding the presence and level of concern posed by the target analytes. For this assessment, a ranking of low, moderate, or high level of concern is determined for each target analyte present based upon an evaluation against the criteria of presence, location, volume/amount, type, potential health hazard(s), and/or condition. Based on the results of this Phase II ESA, the level of concern posed by the target analytes present at the Site investigated as part of this Phase II ESA are presented below.

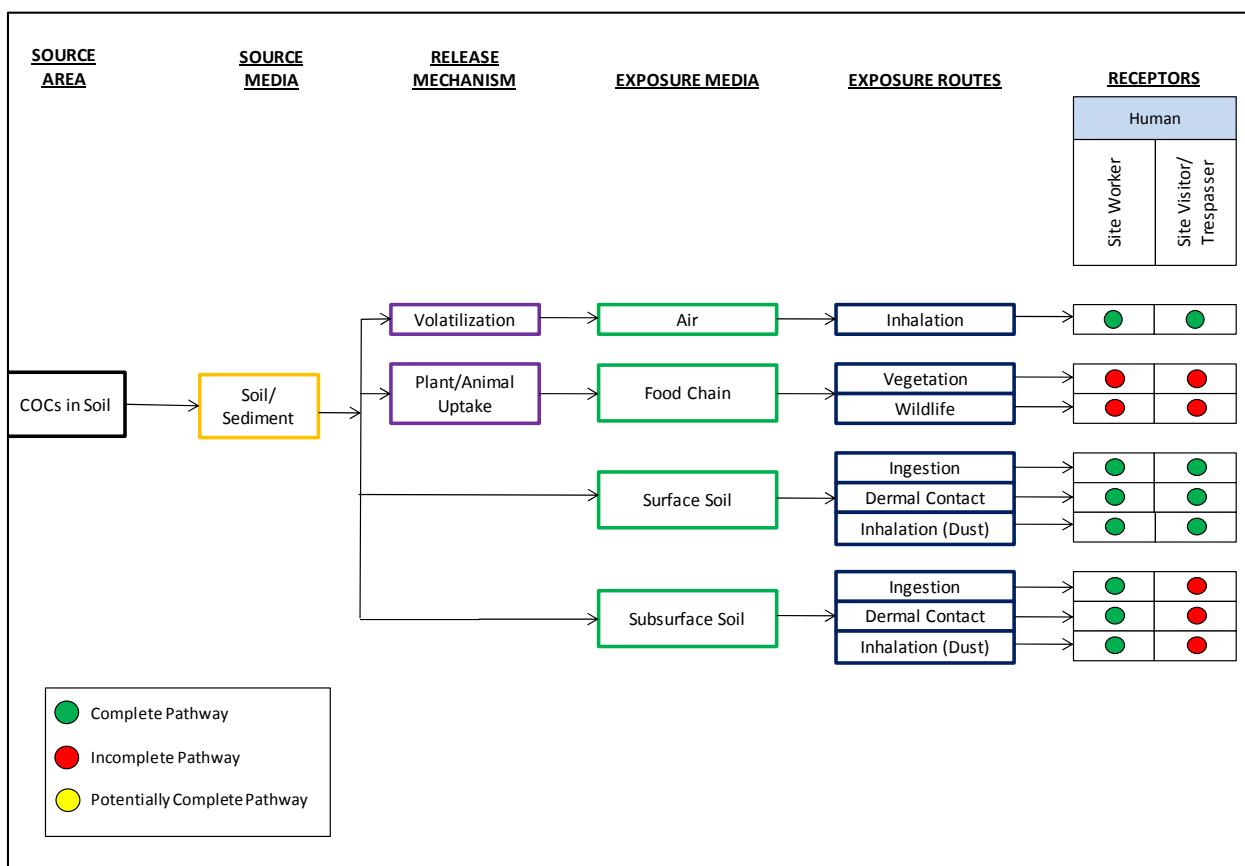
Composite Surface Soil (0 in – 2 in)		
Target Analyte	Present	Level of Concern
Pesticides	Yes	Low – Based upon the following: <ul style="list-style-type: none">• Presence – Pesticides are present in all soils sampled on the Site.• Location – Pesticides are present in the orchard area.• Amount – Pesticide concentrations do not exceed human health screening benchmarks.
TAL Metals	Yes	Low – Based upon the following: <ul style="list-style-type: none">• Presence – TAL Metals are present in all soils sampled on the Site.• Location – TAL Metals are present in the orchard area• Amount – TAL Metals concentrations do not exceed human health screening benchmarks except for arsenic and thallium, which occur at concentrations within the normal background range for Colorado.

pH	Yes	Low – Based upon the following: <ul style="list-style-type: none">• Presence – pH is slightly basic.• Location – pH is slightly basic in the orchard area.• Amount – pH of 7.38 to 7.58.
Composite Subsurface Soil (2 in – 6 in)		
Target Analyte	Present	Level of Concern
Pesticides	Yes	Low – Based upon the following: <ul style="list-style-type: none">• Presence – Pesticides are present in all soils sampled on the Site.• Location – Pesticides are present in the orchard area.• Amount – Pesticide concentrations do not exceed the human health screening benchmarks.
TAL Metals	Yes	Low – Based upon the following: <ul style="list-style-type: none">• Presence – TAL Metals are present in all soils sampled on the Site.• Location – TAL Metals are present in the orchard area• Amount – TAL Metals concentrations do not exceed human health screening benchmarks except for arsenic and thallium, which occur at concentrations within the normal background range for Colorado.
pH	Yes	Low – Based upon the following: <ul style="list-style-type: none">• Presence – pH is slightly basic.• Location – pH is slightly basic in the garden area.• Amount – pH of 7.37 – 7.54.
Composite Subsurface Soil (6 in – 18 in)		
Target Analyte	Present	Level of Concern
Pesticides	Yes	Low – Based upon the following: <ul style="list-style-type: none">• Presence – Pesticides are present in all soils sampled on the Site.• Location – Pesticides are present in the orchard area.• Amount – Pesticides concentrations do not exceed the human health screening benchmarks.
TAL Metals	Yes	Low – Based upon the following: <ul style="list-style-type: none">• Presence – TAL Metals are present in all soils sampled on the Site.• Location – TAL Metals are present in the orchard area• Amount – TAL Metals concentrations do not exceed human health screening benchmarks except for arsenic and thallium.
pH	Yes	Low – Based upon the following: <ul style="list-style-type: none">• Presence – pH is slightly basic.• Location – pH is slightly basic in the garden area.• Amount – pH of 8.05 – 8.13.

Grab Subsurface Soil (0 in – 2 in)		
Target Analyte	Present	Level of Concern
VOCs	Yes	Low – Based upon the following: <ul style="list-style-type: none">• Presence – VOCs are present in all soils sampled on the Site.• Location – VOCs are present in the orchard area.• Amount – VOC concentrations do not exceed the human health screening benchmarks.
SVOCs	Yes	Low – Based upon the following: <ul style="list-style-type: none">• Presence – SVOCs are present in all soils sampled on the Site.• Location – SVOCs are present in the orchard area.• Amount – SVOC concentrations do not exceed the human health screening benchmarks except for benzo(b)fluoranthene and dibenzo(a,h)anthracene. The levels observed are well within what one would expect to see in an urban area like Denver

4.4.2 Exposure Pathway

The current potential exposure pathways for the contaminants of concern as identified in the SAP are presented below. If the site is developed into a community orchard these exposure pathways could change.



4.5 DISCLOSURE OF AVAILABLE DATA INSUFFICIENT TO MEET OBJECTIVES

Per ASTM 1903-11 Section 1.3.2, all Phase II ESA reports must disclose any respect in which available data are insufficient to meet the *Objectives* of the assessment. Listed below are the disclosures in which the available data set for this investigation were insufficient to meet the *Objectives* of this Phase II ESA, if any.

- Based upon the *Objectives* for this Phase II ESA, all *Objectives* of this assessment were met based upon the available data. In no respect was the available data insufficient to meet the *Objectives*.

5.0 FINDINGS, OPINIONS AND CONCLUSIONS OF THE PHASE II ESA

START performed a Phase II ESA in conformance with the scope and limitations of ASTM Practice E 1903-11 for the proposed community orchard, located at 101 King St., Denver, Denver County, Colorado.

This Phase II ESA has confirmed the presence of target analytes investigated as part of the objectives for this assessment that are considered to be COCs in connection with the Site. The following is a list of the COCs and associated media identified by START at the Site:

- Pesticides
 - Alpha-Chlordane, 4,4-DDE, 4,4-DDT, Dieldrin, Gamma-Chlordane, and Heptachlor Epoxide were detected in the surface and/or subsurface increments of one or more samples collected, but did not exceed the EPA Regional Screening Level (RSL) for Residential Soil.
- Metals
 - Arsenic was found to exceed the EPA RSL for Residential Soil in all samples analyzed for metals. Thallium was found to exceed the EPA RSL for Residential Soil in eight surface and subsurface samples and one duplicate.
 - All other metals analyzed were not detected or the reported concentrations did not exceed the EPA RSL for Residential Soil.
- VOCs/SVOCs
 - Benzo(b)fluoranthene, was found to exceed the EPA RSL for Residential Soil in two samples and one duplicate. Dibenzo(a,h)anthracene, was found to exceed the EPA RSL for Residential Soil in one sample. The laboratory reporting limits for Benzo(a)pyrene were above the EPA RSL for Residential Soil, however, the analyte was not detected in any of the samples analyzed for SVOCs, except for the sample BO-SO-18-00-02.
 - All other VOCs/SVOCs analyzed were not detected or the reported concentrations did not exceed the EPA RSL for Residential Soil.
- pH
 - pH of the soil on site was found to vary from 7.37 to 8.13.

Deborah McKean, Phd, EPA Toxicologist, reviewed the analytical data and provided the following determination (see Appendix A for a signed version):

Introduction:

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The purpose of this assessment is to assess laboratory analysis results for presence of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, and Target Analyte List (TAL) metals in soil samples collected at the Site. This assessment evaluates the detected analytes thru a comparison to risk-based Regional Screening Levels (RSLs) for residential land use and literature data on anthropogenic levels of compounds found in the urban environment. The RSLs for soil are based on conservative exposure assumptions of a 30 year duration and 24 hours per day and include ingestion, inhalation and dermal exposure pathways. Although RSLs do not directly evaluate ingestion of fruits and vegetables grown in this soil, the conservative nature of the RSLs are thought to subsume the fruit and vegetable ingestion pathways. These comparisons will be the basis for the determination of suitability of this site as an urban garden.

Analytical Analysis Results

The results highlighted in blue in the attached Tables 2 and 3 are those that exceed RSLs for residential land use.

VOCs

No exceedances of RSLs were observed in any of the soil samples.

SVOCs

Exceedances of residential RSLs were observed for several polycyclic aromatic hydrocarbons (PAHs) in several samples. Those PAHs exceeding residential RSLs include: benzo-a-anthracene, benzo-b-flouranthene, benzo-a-pyrene, and dibenzo(a,h)anthracene. It should be noted that PAHs, are often found at elevated levels in urban environments. Although exceedances are noted, the levels detected do not result in exposures and risk above EPA's target risk range. PAHs are found products of incomplete combustion of gasoline, oil, and coal, in asphalt, and as a result of forest fires. PAHs bind very tightly to soil and are not taken up into plant material.

Pesticides

No exceedances of RSLs were observed in any of the soil samples.

TAL Metals

Arsenic and thallium were found to exceed residential RSLs in a number of soil samples. Although exceeding residential RSLs, arsenic and thallium levels detected are within the range of concentrations typically found in the Denver area as reported by the United States Geological Society (<http://pubs.usgs.gov/of/2014/1082/pdf/ofr2014-1082.pdf>).

Conclusion:

Soil concentrations of PAHs, arsenic and thallium found to exceed residential RSL but are within the range of concentrations typically found in the Denver area. Although risk from direct exposure to soil is minimal compared with other Denver urban soils, it is recommended that soils are amended to lessen the levels of PAHs, arsenic and thallium that have been detected. Therefore, the

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following recommendations may be considered when developing and maintaining gardening areas:

- Amend soil with compost and/or commercial topsoil and adjust pH for optimal growing conditions. Amendment for most gardening areas to one foot is sufficient for plants with shallow root systems. Raised beds using non-site soils can also be considered. Amendment to greater depths over larger areas will be helpful in areas intended for fruit trees since root systems will extend to areas equal to the tree canopy upon tree maturity.
- Cover soil and walkways not used for growing purposes with mulch, geotextiles, or gravel.
- Use Best Management Practices to limit exposure to bare soil, such as those listed in http://www.epa.gov/sites/production/files/2015-09/documents/bf_urban_ag.pdf.

6.0 SIGNATURE OF PHASE II ASSESSOR AND SEAL

This Phase II ESA was completed by the following START personnel; qualifications are provided at the end of the report:

- Mr. Roy Weindorf, P.G., Senior Geologist;
- Mr. Mark Blanchard, P.G., Project Manager

Mr. Roy Weindorf has undertaken the role of Phase II Assessor for this assessment under the supervision of Mark Blanchard. The following is the certification statement as defined by 40 CFR Part 312.10 and have undertaken the inquiry as defined in 40 CFR part 312.21 (b). The following is the certification statement as defined in ASTM Practice E 1903-11 section 9.2.1:

We have performed a Phase II ESA in conformance with the scope and limitations of ASTM Practice E 1903-11 and for the following objectives:

- *Assess and evaluate potential impacts to both surface soil and subsurface soil by suspected contaminants including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Target Analyte List (TAL) metals, and pesticides that are potentially present at the property;*
- *Assess and evaluate potential impacts to both surface soil and subsurface soil by pH values that can impact soil nutrients for gardening at the property;*
- *Develop sufficient information to reasonably render a professional opinion that, with respect to the potential concerns noted above, hazardous substances either are or are not present at the property, including the concentrations of the substances if present; and*
- *Gather and provide sufficient data to assist the Targeted Brownfields Assessment (TBA) recipients in making informed decisions with regard to the future use of the property.*

Roy Weindorf
Certifying Environmental Professional (Print)

Geologist

Title


Signature

1/20/2016

Date

7.0 SPECIFICATIONS FOR ASTM E 1903-11 REPORT USE AND RELIANCE

7.1 SPECIAL TERMS AND CONDITIONS

This document has been prepared by WESTON START as tasked by the EPA solely for the use and benefit of the EPA and DUG. Any use of this document or information herein by persons or entities other than the EPA and DUG without the express written consent of START, will be at the sole risk and liability of said person or entity. START will not be liable to the EPA and DUG, or such persons or entities, for any damages resulting therefrom. It is understood that this document may not include all information pertaining to the described site. The Objectives developed by the EPA, and DUG (users) and START (Phase II Assessor) were to obtain sound, scientifically valid data concerning actual property conditions at the Site with respect to the presence or the likely presence of substances including, but not limited to, those within the scope of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

7.2 LIMITATIONS AND EXCEPTIONS OF ASSESSMENT

ASTM E1903-11 (Section 4.2.1) acknowledges that “No Phase II ESA can eliminate all uncertainty. Furthermore, any sample, either surface or subsurface, taken for chemical testing may or may not be representative of a larger population. Professional judgment and interpretation are inherent in the process, and even when exercised in accordance with objective scientific principles, uncertainty is inevitable. Additional assessment beyond that which was reasonably undertaken may reduce the uncertainty”. ASTM E1903-11 (Section 4.2.1.2) acknowledges that “The effectiveness of a Phase II ESA may be compromised by limitations or defects in the information used to define the objectives and scope of the investigation, including inability to obtain information concerning historic site uses or prior site assessment activities despite the efforts of the user and Phase II Assessor to obtain such information in accordance with 5.1.3”. Furthermore, the ASTM E1903-11 (Section 4.2.2) states “Phase II ESAs do not generally require an exhaustive assessment of environmental conditions on a property. There is a point at which the cost of information obtained and the time required to obtain it outweigh the benefit of the information and, in the context of private transactions and contractual responsibilities, may become a material detriment to the orderly conduct of business. If the presence of target analytes is confirmed on a property, the extent of further assessment is a function of the degree of confidence required and the degree of uncertainty acceptable in relation to the objectives of the assessment”.

7.3 DISCLAIMERS

START has performed this Phase II ESA in general conformance with the scope and limitations of ASTM E 1903-11 standard and TDD 0003/1508-03. The Phase II ESA findings and conclusions presented herein are professional opinions based solely on data collected during the assessment and/or interpretation of information and past data provided for review. The information and data collected from the Site by START is based on the conditions existing on the date(s) of

TDD 0003/1508-03

START's assessment activities at the property. START does not warrant or guarantee information obtained from third parties used for this assessment are correct, complete, and/or current.

Though START did collect samples and/or perform testing during this assessment, it is possible that past contamination remains undiscovered or that property conditions will change in the future. START does not warrant or guarantee the property suitable for any particular purpose or certify the property as "clean."

ASTM E1903-11 Section 1.5) states "This practice is not intended to supersede applicable requirements imposed by regulatory authorities. This practice does not attempt to define a legal standard of care either for the performance of professional services with respect to matters within its scope, or for the performance of any individual *Phase II Environmental Site Assessment*".

Information, limitations, and disclaimers provided in this general section apply to all of the sections included in this report.

8.0 REFERENCES

American Society for Testing and Materials (ASTM), 2011. E1903-11, *Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process*. West Conshohocken, Pennsylvania.

Citation	Reference Type	Assessment Factor				
		Soundness	Applicability and Utility	Clarity and Completeness	Uncertainty and Variability	Evaluation and Review
ASTM, 2011	Guidance	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Denver Urban Gardens, no date. Targeted Brownfields Assessment (TBA) Application.

Citation	Reference Type	Assessment Factor				
		Soundness	Applicability and Utility	Clarity and Completeness	Uncertainty and Variability	Evaluation and Review
DUG, 2015	Letter	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Environmental Protection Agency (EPA). 2015. Technical Direction Document (TDD) 0003/1508-03.

Citation	Reference Type	Assessment Factor				
		Soundness	Applicability and Utility	Clarity and Completeness	Uncertainty and Variability	Evaluation and Review
EPA, 2015	Guidance	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Environmental Protection Agency (EPA). 2011. *Brownfields and Urban Agriculture: Interim Guidelines for Safe Gardening Practices*. Available at http://www.epa.gov/brownfields/urbanag/pdf/bf_urban_ag.pdf

Citation	Reference Type	Assessment Factor				
		Soundness	Applicability and Utility	Clarity and Completeness	Uncertainty and Variability	Evaluation and Review
EPA, 2011	Guidance	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Smith, D.B.; Cannon, W.F.; Woodruff, L.G.; Solano, Federico, Kilburn, J.E.; Fey, D.L. 2013. *Geochemical and mineralogical data for soils of the conterminous United States: U.S. Geological Survey Data Series 801*, 19 p. Available online at: <http://pubs.usgs.gov/ds/801/>

Citation	Reference Type	Assessment Factor				
		Soundness	Applicability and Utility	Clarity and Completeness	Uncertainty and Variability	Evaluation and Review
Smith et al., 2013	Guidance	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Weston Solutions, Inc. (WESTON) Superfund Technical and Response Team (START), 2015. *Sampling and Analysis Plan for Barnum Orchard, Targeted Brownfields Assessment, Denver, Colorado*. August, 2015.

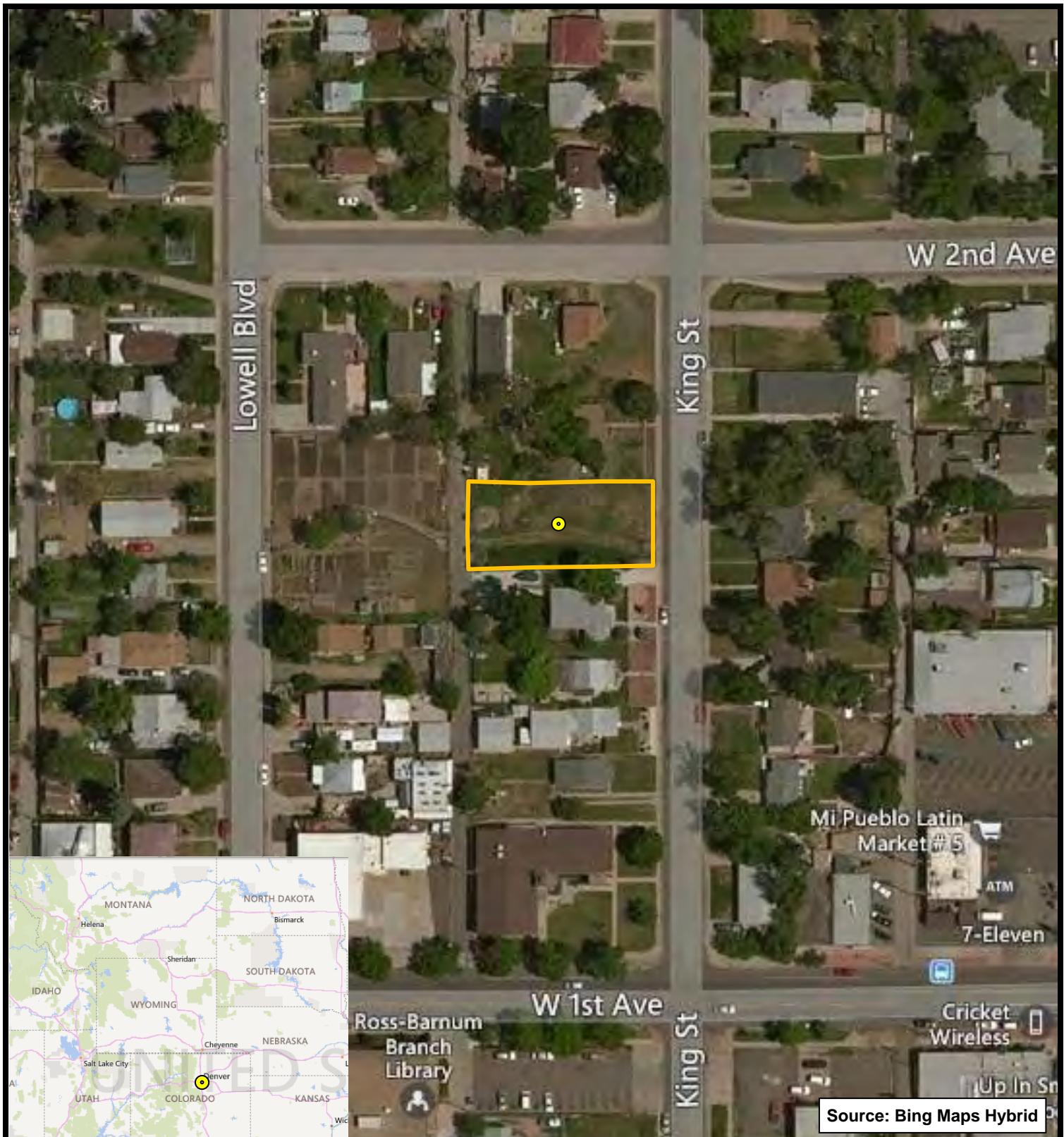
Citation	Reference Type	Assessment Factor				
		Soundness	Applicability and Utility	Clarity and Completeness	Uncertainty and Variability	Evaluation and Review
WESTON START, 2015	Document	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

9.0 QUALIFICATIONS

START utilized qualified, professional staff, trained in performing the scope of work required for this Phase II ESA. This team included a project manager and technical specialist(s). Their roles are described in more detail as follows:

- Project Manager –Mr. Mark Blanchard, P.G. is an environmental professional with 20+ years of experience as a geologist conducting and managing complex projects including site assessments, feasibility studies, and remedial design activities at RCRA/CERCLA sites. He is experienced in conducting and managing projects involving condition assessment, conducting research, and writing and reviewing technical documents including Phase I/II ESAs.
- Senior Geoscientist and Environmental Professional – Mr. Roy Weindorf, P.G. is a professional geologist with over 10 years of experience in the field of environmental sciences. Mr. Weindorf specializes in the development and implementation of site investigation plans, collection & analysis of soil, sediment, groundwater, and surface water data, evaluation of remediation options, and conducting Phase I and Phase II ESA investigations. He is experienced in projects involving initial and secondary site assessments, remedial action/corrective action, risk assessment, closure plan development, and agency negotiation.

FIGURES



Legend

- Site Location
- Orchard Boundary

0 50 100 Feet



Prepared for:
U.S. EPA Region 8



Contract No.:
EP-S8-13-01

TDD:
1508-03

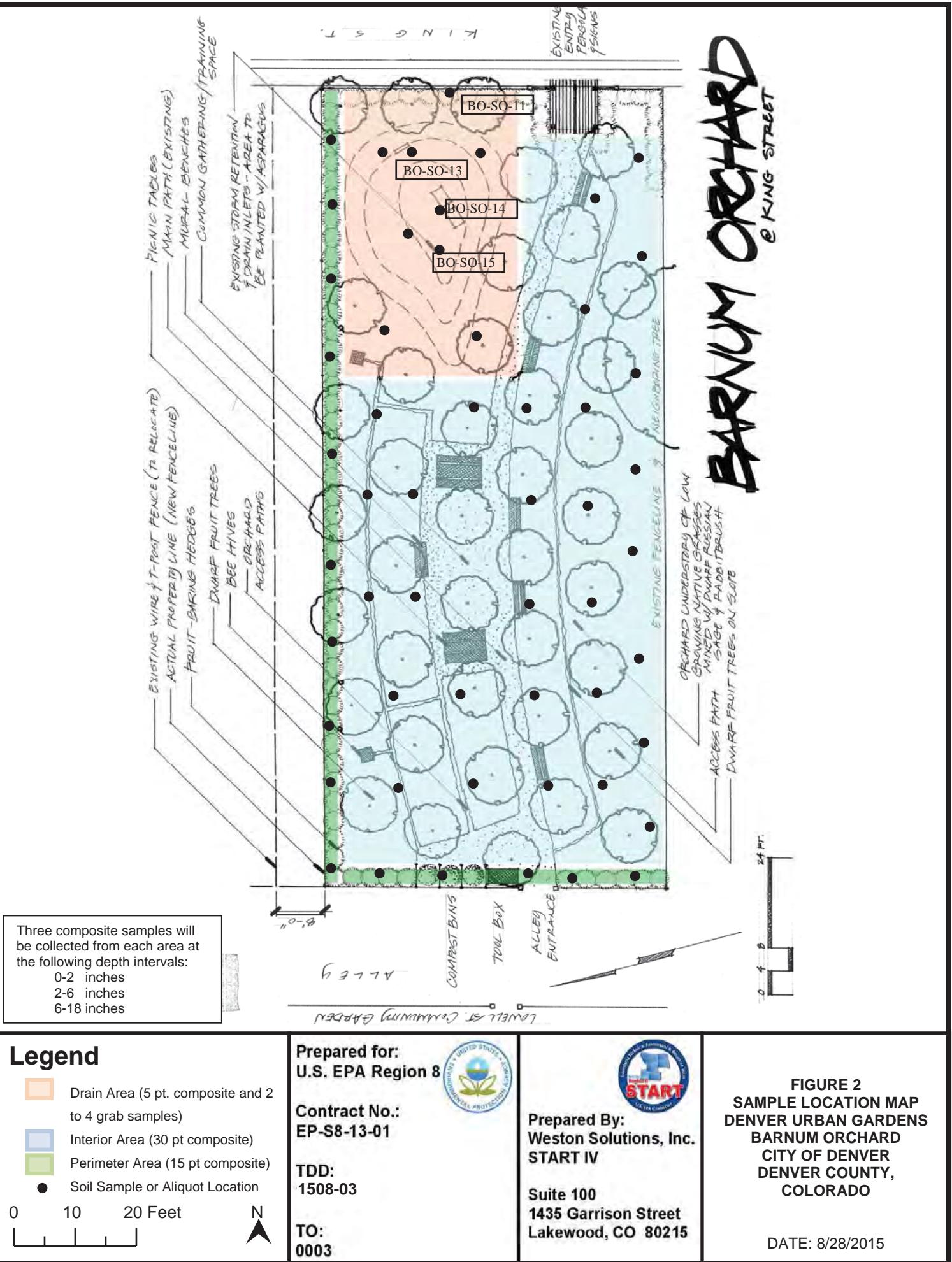
TO:
0003



Prepared By:
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FIGURE 1
SITE LOCATION MAP
DENVER URBAN GARDENS
BARNUM ORCHARD
CITY OF DENVER
DENVER COUNTY,
COLORADO

DATE: 8/28/2015



TABLES

Table 1 - Sample Location Summary
Denver Urban Gardens - Barnum Orchard Site

Sampling Location / ID	Depth (inches)	Type	Analyte/ Analytical Group	Area	Comments
BO-SO-01-00-02	0-2	Composite (30 point)	TAL Metals, Pesticides, pH	Interior	
BO-SO-02-02-06	2-6	Composite (30 point)	TAL Metals, Pesticides, pH	Interior	
BO-SO-10-02-06	2-6	Composite (30 point)	TAL Metals, Pesticides, pH	Interior	Duplicate of sample BO-SO-02-02-06
BO-SO-03-06-18	6-18	Composite (30 point)	TAL Metals, Pesticides, pH	Interior	
BO-SO-18-00-02	0-2	Composite (30 point)	PAH's	Interior	Submitted for MS/MSD analysis
BO-SO-04-00-02	0-2	Composite (15 point)	TAL Metals, Pesticides, pH	Northwest Perimeter	
BO-SO-05-02-06	2-6	Composite (15 point)	TAL Metals, Pesticides, pH	Northwest Perimeter	
BO-SO-06-06-18	6-18	Composite (15 point)	TAL Metals, Pesticides, pH	Northwest Perimeter	
BO-SO-16-00-02	0-2	Composite (15 point)	PAH's	Northwest Perimeter	
BO-SO-17-00-02	0-2	Composite (15 point)	PAH's	Northwest Perimeter	Duplicate of sample BO-SO-16-00-02
BO-SO-07-00-02	0-2	Composite (5 point)	TAL Metals, Pesticides, pH	Drain	
BO-SO-08-02-06	2-6	Composite (5 point)	TAL Metals, Pesticides, pH	Drain	
BO-SO-09-06-18	6-18	Composite (5 point)	TAL Metals, Pesticides, pH	Drain	
BO-SO-19-00-02	0-2	Composite (5 point)	PAH's	Drain	
BO-SO-11-00-02	0-2	Grab	VOC's, SVOC's,	Drain	Sample collected adjacent to Barnum St.
BO-SO-12-00-02	0-2	Grab	VOC's, SVOC's,	Drain	Duplicate of sample BO-SO-11-00-02
BO-SO-13-00-02	0-2	Grab	VOC's, SVOC's,	Drain	Sample collected between drain and Barnum St.
BO-SO-14-00-02	0-2	Grab	VOC's, SVOC's,	Drain	Sample collected adjacent to drain.
BO-SO-15-00-02	0-2	Grab	VOC's, SVOC's,	Drain	Sample collected from lowest point near drain and submitted for MS/MSD analysis.

Notes: TAL = target analyte list, PAH = polynuclear aromatic hydrocarbons, VOC = volatile organic compounds, SVOC = semi-VOC

Table 2 - Analytical Results (Pesticide and Metals)

Denver Urban Gardens - Barnum Orchard Site

Client Sample ID:		EPA RSL	BO-SO-01-00-02	BO-SO-02-02-06	BO-SO-03-06-18	BO-SO-04-00-02	BO-SO-05-02-06	BO-SO-06-06-18	BO-SO-07-00-02	BO-SO-08-02-06	BO-SO-09-06-18	BO-SO-10-02-06
Lab Sample ID:		Residential	D75022-1	D75022-2	D75022-3	D75022-4	D75022-5	D75022-6	D75022-7	D75022-8	D75022-9	D75022-10
Date Sampled:		THQ=1.0	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015
Matrix:			Soil									

Semi-volatiles (Method SW846 8081A)

Aldrin	ug/kg	39	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)						
alpha-BHC	ug/kg	86	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)						
beta-BHC	ug/kg	300	ND (4.0)	ND (4.0)	ND (4.0)	ND (3.9)	ND (4.0)	ND (4.0)	ND (3.9)	ND (3.9)	ND (4.0)	ND (4.0)
delta-BHC	ug/kg	NS	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)						
gamma-BHC (Lindane)	ug/kg	570	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)						
alpha-Chlordane	ug/kg	NS	17.8	15.6	4.4 J	9.8	5.1 J	11	6.2 J	7.6	5.3 J	11.8
gamma-Chlordane	ug/kg	NS	9.4	9.6	ND (3.7)	6.8 J	4.0 J	9.6	5.2 J	5.1 J	4.2 J	9.1
Chlordane	ug/kg	NS	ND (110)									
4,4'-DDD	ug/kg	2300	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)	4.0 J					
4,4'-DDE	ug/kg	2000	5.9 J	6.6 J	ND (3.7)	ND (3.6)	ND (3.6)	ND (3.6)	ND (3.6)	3.7 J	ND (3.6)	5.8 J
4,4'-DDT	ug/kg	1900	8.4	10.6	4.6 J	3.9 J	5.2 J	4.8 J	ND (3.9)	4.2 J	ND (4.0)	7.0 J
Dieldrin	ug/kg	34	ND (3.6)	5.1 J	9.9	ND (3.6)	5.5 J					
Endrin	ug/kg	19000	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)						
Endrin aldehyde	ug/kg	NS	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)						
Endrin ketone	ug/kg	NS	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)						
Endosulfan-I	ug/kg	NS	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)						
Endosulfan-II	ug/kg	NS	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)						
Endosulfan sulfate	ug/kg	NS	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)						
Heptachlor	ug/kg	130	ND (3.6)	ND (3.6)	ND (3.7)	ND (3.6)						
Heptachlor epoxide	ug/kg	70	5.0 J	4.4 J	ND (3.7)	ND (3.6)	3.9 J					
Methoxychlor	ug/kg	320000	ND (5.5)	ND (5.4)	ND (5.5)	ND (5.3)	ND (5.4)	ND (5.4)	ND (5.3)	ND (5.4)	ND (5.4)	ND (5.4)
Toxaphene	ug/kg	490	ND (250)	ND (250)	ND (260)	ND (250)						

Metals Analysis

Aluminum	mg/kg	77000	13300	18100	18200	20300	14600	15000	16800	17600	15700	16200
Antimony	mg/kg	31	<3.2	<3.2	<3.3	<3.2	<3.2	<3.3	<3.1	<3.1	<3.1	<3.2
Arsenic	mg/kg	0.68	8.8	8.7	9.1	9.4	6.3	6.6	8.1	12.5	7.9	10.2
Barium	mg/kg	15000	229	280	275	266	290	248	253	265	258	274
Beryllium	mg/kg	160	1.3	1.6	1.7	1.4	1.3	1.5	1.4	1.3	1.4	1.4
Cadmium	mg/kg	71	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.0	<1.0	<1.0	<1.1
Calcium	mg/kg	NS	10600	11400	12700	11700	10900	10700	10300	10500	12900	10900
Chromium	mg/kg	NS	12.1	12.5	13.5	11.2	10.6	11.1	11.6	12.8	12.5	13.6
Cobalt	mg/kg	23	8.3	8.9	10.4	7.7	7.1	7.4	7.4	8.5	8.2	8.4
Copper	mg/kg	3100	25.9	30.7	26.2	24.1	24.1	26.2	24.3	26.1	23.8	29.1
Iron	mg/kg	55000	19400	22100	23300	20600	19200	20200	20300	22000	22200	21800
Lead	mg/kg	NS	44.1	40.5	34.7	37.6	34.7	36.7	41.5	39.7	36.1	40.3
Magnesium	mg/kg	NS	3970	4420	4610	4070	3800	3700	4000	3970	4690	4150
Manganese	mg/kg	1800	453	547	561	495	437	469	490	523	550	501
Mercury	mg/kg	9.4	<0.086	0.088	0.12	<0.083	<0.087	<0.085	0.13	<0.084	<0.084	0.14
Nickel	mg/kg	1500	10.4	10.4	10.3	8	8.8	7.8	8	8.8	8.2	11.2
Potassium	mg/kg	NS	4390	4300	3470	4540	4070	3320	4620	4310	3470	4240

Table 2 - Analytical Results (Pesticide and Metals)
Denver Urban Gardens - Barnum Orchard Site

Client Sample ID:		EPA RSL	BO-SO-01-00-02	BO-SO-02-02-06	BO-SO-03-06-18	BO-SO-04-00-02	BO-SO-05-02-06	BO-SO-06-06-18	BO-SO-07-00-02	BO-SO-08-02-06	BO-SO-09-06-18	BO-SO-10-02-06
Lab Sample ID:		Residential	D75022-1	D75022-2	D75022-3	D75022-4	D75022-5	D75022-6	D75022-7	D75022-8	D75022-9	D75022-10
Date Sampled:		THQ=1.0	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Selenium	mg/kg	390	<5.4	<5.4	<5.5	<11 ^a	<5.4	<5.5	<5.2	<5.2	<5.1	<5.3
Silver	mg/kg	390	<6.4 ^a	<6.5 ^a	<6.7 ^a	<32 ^a	<6.4 ^a	<6.6 ^a	<6.2 ^a	<31 ^a	<6.1 ^a	<6.3 ^a
Sodium	mg/kg	NS	284	392	601	321	419	359	274	280	393	337
Thallium	mg/kg	0.78	3.4	3.8	3.7	<1.1	1.4	1.4	1.6	4.6	4	3.8
Vanadium	mg/kg	390	39.9	48.7	51	45.1	43.4	47.5	44.1	48.2	51.6	48.3
Zinc	mg/kg	23000	112	126	113	113	111	115	113	120	102	118

General Chemistry

Solids, Percent	%	NS	91.3	92.7	91.1	93.7	92.3	92	93.5	93	91.9	91.5
pH	su	NS	7.5	7.47	8.13	7.58	7.54	8.07	7.38	7.43	8.05	7.37

Notes:

EPA RSL - Environmental Protection Agency Regional Screening Levels

THQ -

ug - micrograms, kg - kilogram, mg - milligram

ND - Analyte not detected in sample analysis.

() - Reporting limit of analysis for an ND result.

NS - No standard.

BOLD - Analyte detected in sample analysis.

J - Estimated value.

Highlighted - Analyte concentration exceeds EPA RSL.

a - Elevated reporting limits due to sample matrix.

% - percent

su - standard units

Table 3 - Analytical Results (Volatile and Semi Volatile Organic Compounds)
Denver Urban Gardens - Barnum Orchard Site

Client Sample ID:		EPA RSL	BO-SO-11-00-02	BO-SO-12-00-02	BO-SO-13-00-02	BO-SO-14-00-02	BO-SO-15-00-02	BO-SO-16-00-02	BO-SO-17-00-02	BO-SO-18-00-02	BO-SO-19-00-02
Lab Sample ID:		Residential	D75022-11	D75022-12	D75022-13	D75022-14	D75022-15	D77986-1	D77986-2	D77986-3	D77986-4
Date Sampled:		THQ=1.0	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	12/8/2015	12/8/2015	12/8/2015	12/8/2015
Matrix:			Soil								
GC/MS Volatiles (SW846 8260C)											
Acetone	ug/kg	6100000	ND (2.5)	4.9 J	ND (2.6)	3.8 J	ND (2.5)				Not Analyzed
Benzene	ug/kg	1200	ND (0.15)	ND (0.14)	ND (0.15)	ND (0.14)	ND (0.15)				Not Analyzed
Bromodichloromethane	ug/kg	290	ND (0.17)	ND (0.16)	ND (0.18)	ND (0.16)	ND (0.17)				Not Analyzed
Bromoform	ug/kg	19000	ND (0.26)	ND (0.25)	ND (0.27)	ND (0.25)	ND (0.26)				Not Analyzed
Bromomethane	ug/kg	6800	ND (0.40)	ND (0.38)	ND (0.42)	ND (0.38)	ND (0.40)				Not Analyzed
2-Butanone (MEK)	ug/kg	2700000	ND (2.1)	ND (2.0)	ND (2.2)	ND (2.0)	ND (2.1)				Not Analyzed
Carbon disulfide	ug/kg	770000	ND (0.25)	ND (0.24)	ND (0.26)	ND (0.24)	ND (0.25)				Not Analyzed
Carbon tetrachloride	ug/kg	650	ND (0.25)	ND (0.24)	ND (0.26)	ND (0.24)	ND (0.25)				Not Analyzed
Chlorobenzene	ug/kg	280000	ND (0.17)	ND (0.16)	ND (0.18)	ND (0.16)	ND (0.17)				Not Analyzed
Chloroethane	ug/kg	1400000	ND (0.53)	ND (0.50)	ND (0.55)	ND (0.50)	ND (0.53)				Not Analyzed
2-Chloroethyl vinyl ether	ug/kg	NS	ND (1.2)	ND (1.2)	ND (1.3)	ND (1.2)	ND (1.2)				Not Analyzed
Chloroform	ug/kg	320	ND (0.16)	ND (0.16)	ND (0.17)	ND (0.16)	ND (0.16)				Not Analyzed
Chloromethane	ug/kg	110000	ND (0.29)	ND (0.27)	ND (0.30)	ND (0.27)	ND (0.29)				Not Analyzed
Dibromochloromethane	ug/kg	730	ND (0.23)	ND (0.21)	ND (0.24)	ND (0.22)	ND (0.23)				Not Analyzed
1,2-Dichlorobenzene	ug/kg	1800000	ND (0.13)	ND (0.13)	ND (0.14)	ND (0.13)	ND (0.13)				Not Analyzed
1,3-Dichlorobenzene	ug/kg	NS	ND (0.17)	ND (0.16)	ND (0.18)	ND (0.16)	ND (0.17)				Not Analyzed
1,4-Dichlorobenzene	ug/kg	2600	ND (0.25)	ND (0.24)	ND (0.26)	ND (0.24)	ND (0.25)				Not Analyzed
1,1-Dichloroethane	ug/kg	3600	ND (0.16)	ND (0.15)	ND (0.16)	ND (0.15)	ND (0.16)				Not Analyzed
1,2-Dichloroethane	ug/kg	460	ND (0.15)	ND (0.14)	ND (0.15)	ND (0.14)	ND (0.15)				Not Analyzed
1,1-Dichloroethene	ug/kg	230000	ND (0.65)	ND (0.62)	ND (0.68)	ND (0.62)	ND (0.65)				Not Analyzed
cis-1,2-Dichloroethene	ug/kg	160000	ND (0.86)	ND (0.81)	ND (0.90)	ND (0.82)	ND (0.86)				Not Analyzed
trans-1,2-Dichloroethene	ug/kg	1600000	ND (0.65)	ND (0.62)	ND (0.68)	ND (0.62)	ND (0.65)				Not Analyzed
1,2-Dichloropropane	ug/kg	1000	ND (0.26)	ND (0.25)	ND (0.27)	ND (0.25)	ND (0.26)				Not Analyzed
cis-1,3-Dichloropropene	ug/kg	NS	ND (0.13)	ND (0.12)	ND (0.14)	ND (0.12)	ND (0.13)				Not Analyzed
trans-1,3-Dichloropropene	ug/kg	NS	ND (0.19)	ND (0.19)	ND (0.20)	ND (0.19)	ND (0.20)				Not Analyzed
Ethylbenzene	ug/kg	5800	ND (0.18)	ND (0.17)	ND (0.19)	ND (0.17)	ND (0.18)				Not Analyzed
2-Hexanone	ug/kg	200000	ND (1.5)	ND (1.4)	ND (1.5)	ND (1.4)	ND (1.5)				Not Analyzed
4-Methyl-2-pentanone(MIBK)	ug/kg	5300000	ND (0.50)	ND (0.48)	ND (0.53)	ND (0.48)	ND (0.51)				Not Analyzed
Methylene chloride	ug/kg	57000	ND (1.1)	ND (1.0)	ND (1.1)	ND (1.0)	ND (1.1)				Not Analyzed
Styrene	ug/kg	6000000	ND (0.20)	ND (0.19)	0.27 J	ND (0.19)	ND (0.20)				Not Analyzed
1,1,2,2-Tetrachloroethane	ug/kg	600	ND (0.19)	ND (0.18)	ND (0.20)	ND (0.18)	ND (0.19)				Not Analyzed
Tetrachloroethene	ug/kg	24000	ND (0.33)	ND (0.31)	ND (0.35)	ND (0.32)	ND (0.33)				Not Analyzed
Toluene	ug/kg	4900000	ND (0.23)	ND (0.22)	ND (0.24)	ND (0.22)	ND (0.23)				Not Analyzed
1,1,1-Trichloroethane	ug/kg	8100000	ND (0.16)	ND (0.16)	ND (0.17)	ND (0.16)	ND (0.16)				Not Analyzed
1,1,2-Trichloroethane	ug/kg	1100	ND (0.16)	ND (0.15)	ND (0.17)	ND (0.15)	ND (0.16)				Not Analyzed
Trichloroethene	ug/kg	940	ND (0.16)	ND (0.15)	ND (0.17)	ND (0.15)	ND (0.16)				Not Analyzed
Vinyl Acetate	ug/kg	NS	ND (1.9)	ND (1.9)	ND (2.0)	ND (1.9)	ND (2.0)				Not Analyzed
Vinyl chloride	ug/kg	59	ND (0.22)	ND (0.21)	ND (0.23)	ND (0.21)	ND (0.22)				Not Analyzed
Xylene (total)	ug/kg	550000	ND (0.30)	ND (0.29)	ND (0.31)	ND (0.29)	ND (0.30)				Not Analyzed
GC/MS Semi-volatiles (SW846 8270C)											
Acenaphthene	ug/kg	3600000	ND (27)	ND (26)	ND (29)	ND (26)	ND (26)	ND (37)	ND (35)	ND (39)	ND (37)
Acenaphthylene	ug/kg	NS	ND (27)	ND (26)	ND (29)	35.7 J	35.4 J	ND (37)	ND (35)	ND (39)	ND (37)
Anthracene	ug/kg	18000000	147	141	67.4 J	69.0 J	67.9 J	ND (28)	ND (27)	ND (29)	ND (28)
Benzo(a)anthracene	ug/kg	160	41.8 J	41.6 J	65.7 J	83.9	91.1	32.3 J	45.4 J	67.2 J	57.9 J
Benzo(b)fluoranthene	ug/kg	160	143	160	201	164	182	52.0 J	93.1	112	99.6
Benzo(k)fluoranthene	ug/kg	1600	126	126	56.5 J	45.3 J	60.1 J	ND (24)	31.8 J	35.7 J	38.4 J
Benzo(g,h,i)perylene	ug/kg	NS	111	123	127	105	119	37.6 J	69.7 J	77.6 J	68.2 J
Benzo(a)pyrene	ug/kg	16	ND (18)	ND (17)	ND (19)	ND (17)	ND (17)	ND (24)	ND (23)	80.0 J	ND (24)
Chrysene	ug/kg	16000	57.2 J	78.2	137	138	149	45.7 J	70.1 J	98.3 J	73.5 J
Dibenzo(a,h)anthracene	ug/kg	16	ND (18)	ND (17)	64.2 J	ND (17)	ND (17)	ND (24)	ND (23)	ND (25)	ND (24)
Fluoranthene	ug/kg	2400000	197	199	219	230	244	58.9 J	109	158	119
Fluorene	ug/kg	2400000	ND (23)	ND (22)	ND (25)	45.2 J	ND (23)	ND (32)	ND (30)	ND (33)	ND (32)
Indeno(1,2,3-cd)pyrene	ug/kg	160	123 J	135 J	152	131 J	154	ND (49)	62.0 J	72.2 J	60.0 J
1-Methylnaphthalene	ug/kg	18000						ND (37)	ND (35)	ND (39)	ND (37)
2-Methylnaphthalene	ug/kg	240000	ND (27)	ND (27)	ND (29)	ND (27)	ND (27)	ND (38)	ND (36)	ND (40)	ND (38)
Naphthalene	ug/kg	130000	ND (29)	ND (28)	ND (31)	ND					

Table 3 - Analytical Results (Volatile and Semi Volatile Organic Compounds)
Denver Urban Gardens - Barnum Orchard Site

Client Sample ID:		EPA RSL	BO-SO-11-00-02	BO-SO-12-00-02	BO-SO-13-00-02	BO-SO-14-00-02	BO-SO-15-00-02	BO-SO-16-00-02	BO-SO-17-00-02	BO-SO-18-00-02	BO-SO-19-00-02
Lab Sample ID:		Residential	D75022-11	D75022-12	D75022-13	D75022-14	D75022-15	D77986-1	D77986-2	D77986-3	D77986-4
Date Sampled:		THQ=1.0	9/10/2015	9/10/2015	9/10/2015	9/10/2015	9/10/2015	12/8/2015	12/8/2015	12/8/2015	12/8/2015
Matrix:			Soil								
bis(2-Chloroethyl)ether	ug/kg	230	ND (33)	ND (32)	ND (36)	ND (33)	ND (33)		Not Analyzed		
bis(2-Chloroisopropyl)ether	ug/kg	4900	ND (30)	ND (29)	ND (32)	ND (29)	ND (29)		Not Analyzed		
2-Chloronaphthalene	ug/kg	4800000	ND (23)	ND (22)	ND (24)	ND (23)	ND (22)		Not Analyzed		
4-Chlorophenyl phenyl ether	ug/kg	NS	ND (26)	ND (25)	ND (28)	ND (26)	ND (26)		Not Analyzed		
Dibenzofuran	ug/kg	73000	ND (26)	ND (25)	ND (28)	ND (26)	ND (26)		Not Analyzed		
Di-n-butyl phthalate	ug/kg	6300000	ND (18)	ND (17)	ND (19)	ND (17)	52.4 J		Not Analyzed		
1,2-Dichlorobenzene	ug/kg	1800000	ND (32)	ND (31)	ND (34)	ND (31)	ND (31)		Not Analyzed		
1,3-Dichlorobenzene	ug/kg	NS	ND (29)	ND (28)	ND (31)	ND (29)	ND (28)		Not Analyzed		
1,4-Dichlorobenzene	ug/kg	2600	ND (27)	ND (26)	ND (29)	ND (27)	ND (27)		Not Analyzed		
3,3'-Dichlorobenzidine	ug/kg	1200	ND (18)	ND (17)	ND (19)	ND (17)	ND (17)		Not Analyzed		
Diethyl phthalate	ug/kg	51000000	ND (19)	ND (19)	ND (21)	ND (19)	ND (19)		Not Analyzed		
Dimethyl phthalate	ug/kg	NS	ND (21)	ND (20)	ND (22)	ND (21)	ND (20)		Not Analyzed		
2,4-Dinitrotoluene	ug/kg	1700	ND (18)	ND (17)	ND (19)	ND (17)	ND (17)		Not Analyzed		
2,6-Dinitrotoluene	ug/kg	360	ND (70)	ND (68)	ND (75)	ND (70)	ND (69)		Not Analyzed		
Di-n-octyl phthalate	ug/kg	630000	ND (32)	ND (31)	ND (35)	ND (32)	ND (32)		Not Analyzed		
bis(2-Ethylhexyl)phthalate	ug/kg	39000	123	70.5	191	615	444		Not Analyzed		
Hexachlorobenzene	ug/kg	210	ND (26)	ND (25)	ND (27)	ND (25)	ND (25)		Not Analyzed		
Hexachlorobutadiene	ug/kg	1200	ND (30)	ND (29)	ND (32)	ND (30)	ND (30)		Not Analyzed		
Hexachlorocyclopentadiene	ug/kg	1800	ND (24)	ND (23)	ND (26)	ND (24)	ND (24)		Not Analyzed		
Hexachloroethane	ug/kg	1800	ND (30)	ND (29)	ND (32)	ND (30)	ND (30)		Not Analyzed		
Isophorone	ug/kg	570000	ND (27)	ND (27)	ND (29)	ND (27)	ND (27)		Not Analyzed		
2-Nitroaniline	ug/kg	630000	ND (21)	ND (20)	ND (23)	ND (21)	ND (21)		Not Analyzed		
3-Nitroaniline	ug/kg	NS	ND (110)	ND (100)	ND (110)	ND (100)	ND (100)		Not Analyzed		
4-Nitroaniline	ug/kg	27000	ND (18)	ND (17)	ND (19)	ND (17)	ND (17)		Not Analyzed		
Nitrobenzene	ug/kg	5100	ND (32)	ND (31)	ND (35)	ND (32)	ND (32)		Not Analyzed		
N-Nitrosodiphenylamine	ug/kg	110000	ND (26)	ND (25)	ND (28)	ND (26)	ND (26)		Not Analyzed		
N-Nitroso-di-n-propylamine	ug/kg	76	ND (25)	ND (24)	ND (26)	ND (24)	ND (24)		Not Analyzed		
1,2,4-Trichlorobenzene	ug/kg	24000	ND (26)	ND (25)	ND (28)	ND (26)	ND (26)		Not Analyzed		

General Chemistry

Solids, Percent	%	NS	94.7	97.6	88.8	95.3	96.5	68.2	72.2	65.7	68.9
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Notes:

EPA RSL - Environmental Protection Agency Regional Screening Levels

THQ -

ug/kg - micrograms per kilogram

ND - Analyte not detected in sample analysis.

() - Reporting limit of analysis for an ND result.

NS - No standard.

BOLD - Analyte detected in sample analysis.

J - Estimated value.

Highlighted - Analyte concentration exceeds EPA RSL.

% - percent

APPENDIX A
TOXICOLOGIST REVIEW AND BEST MANAGEMENT PRACTICES



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8

1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

January 11, 2016

MEMORANDUM

FROM: Deborah McKean, Ph.D.
Chief, Technical Assistance Unit
Office of Ecosystems Protection and Remediation

TO: Ted Lanzano
Brownfields Team, Assessment and Revitalization Program
Office of Ecosystems Protection and Remediation

SUBJECT: Qualitative Risk Assessment of Phase II ESA Data for Barnum Orchard at 101 King Street, Denver, Colorado

Introduction:

The purpose of this assessment is to assess laboratory analysis results for presence of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, and Target Analyte List (TAL) metals in soil samples collected at the Site. This assessment evaluates the detected analytes thru a comparison to risk-based Regional Screening Levels (RSLs) for residential land use and literature data on anthropogenic levels of compounds found in the urban environment. The RSLs for soil are based on conservative exposure assumptions of a 30 year duration and 24 hours per day and include ingestion, inhalation and dermal exposure pathways. Although RSLs do not directly evaluate ingestion of fruits and vegetables grown in this soil, the conservative nature of the RSLs are thought to subsume the fruit and vegetable ingestion pathways. These comparisons will be the basis for the determination of suitability of this site as an urban garden.

Analytical Analysis Results.

The results highlighted in blue in the attached Table are those that exceed RSLs for residential land use.

VOCs

No exceedances of RSLs were observed in any of the soil samples.

SVOCs

Exceedances of residential RSLs were observed for several polycyclic aromatic hydrocarbons (PAHs) in several samples. Those PAHs exceeding residential RSLs include: benzo-a-anthracene, benzo-b-flouranthene, benzo-a-pyrene, and dibenzo(a,h)anthracene. It should be noted that PAHs, are often found at elevated levels in urban environments. Although exceedances are noted, the levels detected do not result in exposures and risk above EPA's target risk range. PAHs are found products of incomplete combustion of gasoline, oil, and coal, in asphalt, and as a result of forest fires. PAHs bind very tightly to soil and are not taken up into plant material.

Pesticides

No exceedances of RSLs were observed in any of the soil samples.

TAL Metals

Arsenic and thallium were found to exceed residential RSLs in a number of soil samples. Although exceeding residential RSLs, arsenic and thallium levels detected are within the range of concentrations typically found in the Denver area as reported by the United States Geological Society (<http://pubs.usgs.gov/of/2014/1082/pdf/ofr2014-1082.pdf>).

Conclusion:

Soil concentrations of PAHs, arsenic and thallium found to exceed residential RSL but are within the range of concentrations typically found in the Denver area. Although risk from direct exposure to soil is minimal compared with other Denver urban soils, it is recommended that soils are amended to lessen the levels of PAHs, arsenic and thallium that have been detected. Therefore, the following recommendations may be considered when developing and maintaining gardening areas:

- Amend soil with compost and/or commercial topsoil and adjust pH for optimal growing conditions. Amendment for most gardening areas to one foot is sufficient for plants with shallow root systems. Raised beds using non-site soils can also be considered. Amendment to greater depths over larger areas will be helpful in areas intended for fruit trees since root systems will extend to areas equal to the tree canopy upon tree maturity.
- Cover soil and walkways not used for growing purposes with mulch, geotextiles, or gravel.
- Use Best Management Practices to limit exposure to bare soil, such as those listed in http://epa.gov/brownfields/urbanag/pdf/bf_rurban_ag/pdf.



 **EPA**
EPA 542-F-10-011



REUSING POTENTIALLY CONTAMINATED LANDSCAPES: Growing Gardens in Urban Soils

This fact sheet provides communities and individuals with general urban gardening information about:

- Common contaminants that can be found in urban soil.
- Ways to identify contaminants and reduce exposure.
- Improving soils and growing plants in mildly contaminated soil.
- Additional resources and technical assistance.

Introduction

Communities throughout the country are turning to urban agriculture and gardening as a reasonable option to increase their access to healthy, nutritious, and low-cost produce. Some of the sites that communities are using for urban gardens were previously home to industrial and commercial operations. A garden on abandoned land can become a new community asset by improving the visual look of a neighborhood and potentially increasing nearby property values. Community gardens provide many benefits, including healthier lifestyles by increasing activity levels, providing fresh produce, growing community pride, and nurturing social interactions and cooperation among people.

For communities interested in gardening on a site that might be contaminated, it is important to first determine the health and suitability of the soil at the site. It is a common gardening practice to test soil for characteristics such as pH and nutrient availability. When creating a garden on land with an industrial or commercial history, it is highly recommended that communities consider the site's land use history and test the soil accordingly for potential contamination. Knowledge of soil health and potential contamination are keys to helping communities identify and correct problems so that each urban garden is safe and productive.

The possibility of contamination at a garden site should not keep you from planning an urban garden there. This fact sheet presents steps that you can take to find out and address potential contamination at your site to help create a safe and healthy garden for your community.



More information for the urban gardener on soil science, soil amendments, plants, contaminants and their health effects, and additional links is available on EPA's CLU-IN website: www.clu-in.org/ecotools/urbangardens.cfm.



Soil Quality

Q: Why Is Healthy Soil Important for Your Garden?

A: Healthy soil is essential for plants to grow in your garden. When a property has been used for industrial or commercial activities, the soil is often nutrient deficient, highly compacted and potentially contaminated. These soils can be improved and made healthy again so that your garden plants can grow and thrive. Healthy soil holds water and contains beneficial organisms, plant nutrients, and organic matter.

Soil Nutrients

Soil nutrients are vital for healthy soil and must be available for plants to grow. Soil tests will help you determine the existing nutrients available in your soil and indicate which nutrients and nutrient amounts need to be added. Mineral nutrients such as nitrogen, phosphorus, potassium (NPK), and calcium can occur naturally in the soil, but often need to be applied to maintain a healthy balance. Soil nutrients may be added in various forms, including: fertilizer and lime (available in most gardening stores) and organic matter such as grass clippings, leaves, and compost.

Physical Properties of Soil

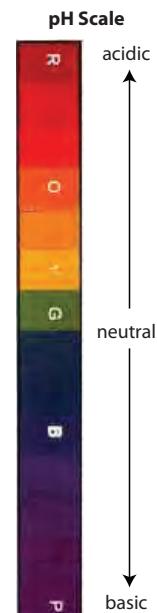
The physical properties of soil determine how well nutrients are available to plants. Soil contains a combination of sand, rock, silt, clay, air, and organic matter, which affects its ability to hold nutrients and water.

You can improve the physical quality of your soil by leveling and loosening the soil and adding organic matter such as compost and manure. These additions can increase the amount of water that sandy soils can absorb or hold and can improve the drainage of clay soils.

Soil pH

Soil pH affects the amounts and types of nutrients available to plants through their roots. The pH scale goes from 0 to 14; a pH of 7 is neutral. A lower number means a more acidic soil, while a higher number means a more basic or alkaline soil. Certain nutrients are less available to plants in soils where the pH is too low or too high. When a soil's pH is near neutral, nutrients are more readily available to plants, and microbial populations in the soil increase. A soil test will tell you the pH of your soil. Based on this information, you will be able to determine whether soil amendments (soil additions) are needed to change the pH of your soil to meet your gardening needs. You can raise the pH of soil by adding lime or wood ash. You can lower the pH of soil to make it more acidic by using fertilizers containing ammonium-nitrate or specialty fertilizers for "acid-loving" plants that contain ammonium sulfate or sulfur-coated urea.

For more information on amendments that can be used to improve soil quality, see Techniques for Addressing Soil Contamination in the Resources section in this fact sheet, page 11.



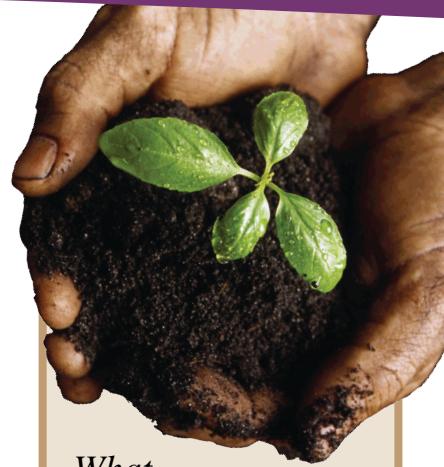
Contaminants

A soil contaminant is an element or chemical present in the soil at a level that could possibly pose health risks. In a few areas of the country, element levels may be naturally high. In many cases, human activities have increased the soil levels of many elements and chemicals and also spread them out more widely. Lead, cadmium, arsenic, zinc, and polycyclic aromatic hydrocarbons (PAHs) are contaminants commonly found in any urban environment. In addition, other contaminants can also be found in areas near former commercial or industrial properties. Table 1 lists sources of contamination that are commonly found on sites with a commercial or industrial history.

Table 1. Common Sources of Contamination¹

General Source	Examples of Previous Site Uses	Specific Contaminants
Paint (before 1978)	Old residential buildings; mining; leather tanning; landfill operations; aircraft component manufacturing	Lead
High traffic areas	Next to heavily trafficked roadways or highways; near roadways built before leaded fuel was phased out	Lead, zinc, polycyclic aromatic hydrocarbons (PAHs)
Treated lumber	Lumber treatment facilities	Arsenic, chromium, copper
Burning wastes	Landfill operations	PAHs, dioxins
Contaminated manure	Copper and zinc salts added to animal feed	Copper, zinc
Coal ash	Coal-fired power plants; landfills	Molybdenum, sulfur
Sewage sludge	Sewage treatment plants; agriculture	Cadmium, copper, zinc, lead, persistent bioaccumulative toxins (PBTs)
Petroleum spills	Gas stations; residential/commercial/industrial uses (anywhere an aboveground or underground storage tank is or has been located)	PAHs, benzene, toluene, xylene, ethyl benzene
Pesticides	Widespread pesticide use, such as in orchards; pesticide formulation, packaging and shipping	Lead, arsenic, mercury, chlordane and other chlorinated pesticides
Commercial/industrial site use		PAHs, petroleum products, solvents, lead, other heavy metals (such as arsenic, cadmium, chromium, lead, mercury and zinc)
Dry cleaners		Stoddard solvent and tetrachloroethylene
Metal finishing operations		Metals and cyanides

EPA's Toxic Release Inventory (TRI) can provide information to communities about sites where contaminants were released into the environment. The Envirofacts database allows users to enter location information, such as zip code, address or county location, to get information about releases in their area. The database is available online at: www.epa.gov/enviro.



What Are Soil Background Levels?

Background levels are the naturally occurring levels of elements and chemicals found in any soil. Background levels differ depending on the region of the country in which you live. In some areas background levels for certain elements and chemicals may be higher. Contact your local extension service or state environmental agency (see Technical Assistance in the Resources section, page 10) for help in learning more about elemental background levels for the soil in your neighborhood.

More information on soil background levels in the United States is available at: <http://pubs.usgs.gov/of/2005/1253/pdf/OFR1253.pdf>.

¹ Adapted from Heinegg, A., Maragos, P., Mason, E., Rabinowicz, J., Straccini, G. and Walsh, H. (2000) Urban Agriculture and Soil Contamination, available at: http://cepm.louisville.edu/Pubs_WPapers/practiceguides/PG25.pdf.





Contaminants continued

Q: How Do I Know if My Property is Contaminated?

A: You can conduct a formal environmental assessment (study) of the land you are interested in using for urban gardening. There are two types of assessments: Phase I and Phase II Environmental Assessments. A Phase I assessment includes a review by a trained environmental professional of historical site uses, interviews with neighbors and, if possible, site owners, and a visual site inspection to determine the potential for and type of contamination at a site. If a Phase I assessment determines that there is potential for contamination at the site, a Phase II assessment is conducted to sample for contaminants and locate any impacted areas.

For more information on Phase 1 and Phase 2 assessments, contact your local and state environmental agencies. Some local governments may even be able to provide you with a Phase I or Phase II environmental assessment or have qualified environmental professionals on staff who can conduct the assessment.

Q: What if My Community Needs Help with Site Assessments, Sampling or Cleanup?

A: Federal funding is available to government entities to conduct brownfields (property where reuse may be complicated due to on-site contamination) assessments. Working with local officials to apply for an EPA brownfields grant can provide money for your community to assess or clean up the property you are interested in as well as address other properties.

What you need to know to get started in applying for brownfields grants can be found at: www.epa.gov/brownfields/grant_info/assess/assessment_factsheet.pdf.

Biosolids

Biosolids are the nutrient-rich organic materials resulting from the treatment of sewage sludge (the name for the solid, semi-solid or liquid untreated residue generated during the treatment of domestic sewage in a treatment facility). When treated and processed, sewage sludge becomes biosolids, which are tested for safety to be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth. Only biosolids that meet the strictest state and federal standards can be approved for use as a fertilizer.

More information on how biosolids have been used to solve problems on potentially contaminated lands is available at: www.cluin.org/ecotools/soil.cfm.

More information on biosolids is available at: <http://water.epa.gov/polwaste/wastewater/treatment/biosolids/genqa.cfm>.

More information for the urban gardener on soil science, effects, and additional links is available on EPA's CLU-IN

Exposure Pathways

Q: How Could I Come into Contact with Contaminants while Gardening?

A: An exposure pathway is the way that a contaminant comes into contact with people. If a site assessment concludes that contaminants are present, the next step is to think about potential contaminant impacts as you work the soil to garden or eat the food you grow. There are two human exposure pathways to soil contaminants: the *soil-to-human pathway* and the *soil-to-plant-to-human pathway*.

Soil-to-Human Exposure Pathway

While gardening, the greatest risk of exposure to contaminants is from contaminated soil getting into your mouth or by breathing in contaminated dust. For example, children playing in the garden may directly eat soil through hand-to-mouth play, or people may eat plants without first washing them to remove soil and dust. Skin contact (dermal exposure) with soils containing contaminants such as PAHs, chromium and trichloroethylene (TCE) can pose health risks.

Soil-to-Plant-to-Human Exposure Pathway

Some edible plants do take up and accumulate contaminants. A plant's uptake of contaminants depends on many factors, including the type of plant and the pH and organic content of the soil. However, research shows that there is minimal risk of exposure from eating plants grown in contaminated soils. To reduce concerns of exposure from eating plants, wash produce thoroughly before eating to remove potential soil contamination. Root vegetables have a higher potential for accumulating contaminants. In some cases, it may be prudent to avoid growing edible plants in soils with high contaminant concentrations.



What Are EPA Soil Screening Levels (SSLs) and Can SSLs Be Used as Limits for Urban Gardening?

EPA's SSLs were developed to determine if the soil at Superfund (program that allows EPA to clean up hazardous waste sites) sites warrants further study, investigation or possibly cleanup depending on how a site is being used (for example, for residential or commercial purposes). These screening levels look at several *soil-to-human* exposure pathways, including: direct ingestion, dermal exposure, and inhalation. EPA's general guidance states that if an SSL is not exceeded for a pathway of concern, the user may eliminate that pathway from further investigation. While EPA does not have SSLs for gardening, some states may decide that residential SSLs are appropriate to use for gardening purposes, or they may establish appropriate levels specific to each site.

Wise Urban Gardening

In general, the benefits of urban gardening greatly outweigh the risks. By following the recommendations and best practices listed below, you will decrease your likelihood of exposure to contaminants that are commonly found in urban soils located on sites with past industrial and commercial uses.

Q: What Can I Do to Lower the Chances of Coming into Contact with Contaminants that May Be in Present in my Soil?

A: If you find that the soil in which you want to garden is contaminated, you may want to first consult with your state and local environmental agencies and EPA's Technical Assistance to Brownfields (TAB) program (see Technical Assistance in the Resources section, page 10) to learn about how to find professional site cleanup specialists who can recommend the best techniques for reducing high levels of contaminants. The following techniques are commonly used to eliminate exposure to soil contaminants:

- **Build raised beds.**
- **Use soil amendments to stabilize contaminants in soil.** Adding a thick layer of organic matter to your soil provides a physical barrier to contamination. Soil amendments may reduce mobility or bioavailability of contaminants. Soil amendments improve the overall soil quality for growing plants and are a good addition to any soil.
- **Remove all contaminated soil and replace it with clean soil.** Make sure the replacement soil is clean by asking the supplier for proof that the soil that was tested to be contaminant-free.
- **Use of phytotechnologies,** which utilize plants to extract, degrade, contain or immobilize contaminants in soil. However, using phytotechnologies to clean up contaminants can take many years, is not effective for every contaminant, and generally requires special handling for the disposal of plants used. Information on specific contaminants that can be remediated using phytotechnologies is available at: www.cluin.org/download/remed/phytotechnologies-factsheet.pdf.



Bioavailability

Build Raised Beds and Container Gardening

Building raised beds and growing plants in containers is the most common way to reduce the chances of coming into contact with contaminants in urban gardens. These gardening techniques are preferred because the clean soil and organic matter used to build the raised beds creates a physical barrier between the gardeners/plants and possible contamination in the ground soils. Raised beds can be built for permanent or seasonal use.

How to build raised beds:

- Place a layer of landscape fabric on top of the ground soil before adding the clean soil and organic matter. The fabric layer creates a barrier beneath the soil in the bed that prevents plant roots from entering the ground soil below the bed.
- Build a frame to hold the clean soil for a permanent raised bed. Ask for non-treated lumber when getting wood to build the frame.

See the National Gardening Association's how-to video on "Making a Raised Bed Garden," available at: www.garden.org/howtovideos/index.php?page=video2.

Even when you are using raised bed and container gardens to address contamination, airborne contaminants, soil dust, or soil splashback from other areas may still enter the raised beds. Consider covering walkways and other areas of exposed soil with mulch, grass, or other groundcover to help reduce dust migration and splashback onto crops and protect against human exposure when gardening.

The risks associated with contaminant levels in soil may also be much lower than expected based on test results because of the bioavailability of the contaminant in the soil. Bioavailability of a contaminant is the amount of contaminant that can be taken up by your body. It depends on the characteristics of the site and the soil. Treatment of soils rich in lead with phosphate and compost may reduce the bioavailability of soil lead.

Phytotechnologies and Lead

Q: Lead is a common contaminant in urban soils. Can I use phytoremediation to remove lead from the soil at my site?

A: No. Phytoremediation of lead in soils is ineffective since lead is generally not available for plant uptake.





Best Practices in the Garden

Building raised beds and mulching pathways is an excellent way to reduce the chance of coming into contact with potential contaminants. The recommendations below can add another layer of protection if you have raised beds or decide to do in-ground planting.

- **Locate** gardens away from old painted buildings and roads with heavy traffic.
- **Use** a thick layer of organic material such as compost or mulch. Place landscape fabric between ground soil and new, clean soil.
- **Watch** over small children to stop them from eating soil through hand-to-mouth play.
- **Wash** hands immediately after gardening and before eating to avoid accidentally eating soil.
- **Wear** gloves as a barrier between your hands and the soil.
- **Throw away** the outer leaves of greens, especially from the bottom of plants, before washing. Soil particles are most likely to be located on the outer leaves of leafy plants.
- **Wash** produce using running water.
- **Avoid bringing** contaminated soil into the home by:
 - Cleaning tools, gloves and shoes before bringing them indoors.
 - Putting highly soiled clothes in a bag before bringing them indoors and washing them promptly in a separate load.
 - Washing off excess dirt from crops, especially root crops and leafy vegetables, before bringing them indoors.
- **Peel** vegetables, especially root vegetables, which are in direct contact with soil.





Steps You Can Take to Reduce Potential Risk from Contaminants When Growing Vegetables:

- Add high rates of compost and other organic soil amendments to the soil (up to 50:50 by volume) in order to dilute soil contaminant concentrations, improve the physical properties of soil and plant growth, and make contaminants less available for plants to take up.
- Garden in raised beds or containers to separate the garden from the contaminated soil.

To learn about safe levels of soil contamination and the cleanup requirements of sites used for gardening or farming in your area, contact your state environmental agency or cooperative extension services.

Contact information is provided under *Technical Assistance* in the *Resources* section, page 10.

Choosing Crops

In general, plants that produce fruiting bodies (for example, tomatoes, squash, apple and pear trees, and berries) are most appropriate for growing in potentially contaminated soil. Root and tuber crops (for example, carrots, potatoes and onions) are often the least appropriate plants to grow in potentially contaminated soil, as the edible portions of the crops are in direct contact with the soil. Vegetables with large outer leaves (for example, cabbage, lettuce and collard greens) are easily contaminated by dust and soil splashback, so careful washing of these plants is necessary.

Conclusion

There are many effective ways to reduce or eliminate any risk from gardening on potentially contaminated land. Gardening provides many benefits to communities and individuals. The information in this fact sheet is designed to help you understand the steps that your community can take to create healthy garden conditions for growing a variety of delicious and nutritious crops. So go dig, plant, harvest and enjoy!





Case Study

LIBERTY LANDS

Philadelphia, Pennsylvania

Twenty years ago, the Northern Liberties neighborhood was the only zip code in Philadelphia without a community green space. Several tanneries contaminated the neighborhood. EPA conducted removal actions and cleaned up the site. Neighborhood residents worked with the City of Philadelphia to find resources for reusing the site. EPA provided soil testing and other technical assistance to ensure that the site was safe for reuse as a park and community garden. Hundreds of hours of donated time, monthly meetings, outreach and fundraising efforts resulted in Liberty Lands community park becoming a reality. The park opened in 1996 and includes 37 garden plots and a composting area, an herb and butterfly garden, a children's playground, open space for community events, and community art and sculpture. The park is at the center of a revitalized community, surrounded by new residential and commercial redevelopment.

For more information, visit www.epa.gov/brownfields/success/libertylandspass.pdf.

Resources for Urban Gardeners

Technical Assistance

1. Local agricultural cooperative extension services can help with interpreting soil quality results (i.e., pH and nutrients testing) and provide a list of local environmental departments or laboratories that test for soil contaminants. U.S. Department of Agriculture extension services are listed online at: www.csrees.usda.gov/Extension/index.html.
2. EPA's Technical Assistance to Brownfields (TAB) program can help with questions regarding Phase I and Phase II Environmental Assessments. The TAB website is available at: www.epa.gov/brownfields/tools/index.htm#tab. In addition, several TAB providers have experience working with communities to explore urban agricultural opportunities. These providers include:
 - Kansas State University: www.engg.ksu.edu/chsr/outreach/tab.
 - Center for Creative Land Recycling (especially in California and Colorado): www.cclr.org.
3. State and tribal brownfields programs may be able to help with information specific to your state or tribe. To find your state brownfields program, visit: www.epa.gov/brownfields/state_tribal/state_map.htm. To find your tribal brownfields program, visit: www.epa.gov/brownfields/state_tribal/tribe_progs.htm.



Additional Resources

General Information

More information about creating an urban garden is available at: www.epa.gov/brownfields/urbanag/.

More information on soil science, soil amendments, plants, contaminants and their health effects, and additional links can be found on EPA's CLU-IN website, available at: www.clu-in.org/ecotools/urbangardens.cfm.

Soil Quality

More information on soil health is available at:

- EPA's Hazardous Waste Cleanup Information website: www.clu-in.org/ecotools/soil.cfm.
- Cornell's Waste Management Institute website: <http://cwmii.css.cornell.edu/soilquality.htm>.
- Local agricultural cooperative extension services website: www.csrees.usda.gov/extension.

Contaminants

The EPA Sector Notebook Series is a set of profiles containing information on specific industries. The notebooks can help your community identify types of contaminants often associated with specific commercial and industrial land uses. The notebooks are available at: www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/index.html.

EPA's Toxics Release Inventory System provides useful information about the history of individual sites: www.epa.gov/tri/.

Information about the health effects of particular contaminants is available at:

- The Agency for Toxic Substances and Disease Registry (ATSDR): www.atsdr.cdc.gov/substances/index.asp.
- EPA's Integrated Risk Information System (IRIS): www.epa.gov/iris.
- The Risk Assessment Information System: <http://rais.ornl.gov>.

In addition, EPA's Superfund Redevelopment Initiative website has a web page where reuse questions can be submitted: www.epa.gov/superfund/programs/recycle/contact/index.html.

Techniques for Addressing Soil Contamination

For more information on techniques for addressing soil contamination:

- EPA fact sheet: *Soil Amendments for Remediation, Revitalization and Reuse Tools: Fact Sheet*, available at: www.clu-in.org/download/remed/540R07013.pdf.
- EPA paper: *The Use of Soil Amendments for Remediation, Revitalization and Reuse* available at: www.clu-in.org/download/remed/epa-542-r-07-013.pdf.
- EPA paper: *Urban Agriculture and Soil Contamination: An Introduction to Urban Gardening* available at: http://cepm.louisville.edu/Pubs_WPapers/practiceguides/PG25.pdf.
- EPA fact sheet on brownfields redevelopment and local agriculture available at: www.epa.gov/brownfields/success/local_ag.pdf.
- EPA's fact sheet on phytotechnologies, available at: www.cluin.org/download/remed/phytotechnologies-factsheet.pdf.

Funding Opportunities

More information on funding sources for brownfields assessment, cleanup, revolving loans and environmental job training is available at: www.epa.gov/brownfields/grant_info/index.htm.

EPA's fact sheet on how to apply for Brownfields Assessment Grants is available at: www.epa.gov/brownfields/grant_info/assess/assessment_factsheet.pdf.

Learning about and taking steps to assess and address potential contamination can help you to ensure that your urban garden area is safe and productive. You can reap the benefits for years to come.



United States
Environmental Protection
Agency

United States Environmental Protection Agency
Office of Superfund Remediation and Technology Innovation (5203P)
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

EPA 542-F-10-011 | Spring 2011 | www.clu-in.org/ecotools/urbangardens.cfm



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APPENDIX B
PHOTOGRAPHIC LOG

Photograph No. 1

Date:
September 4, 2015

Direction of Photo:
Northeast

Photographer:
Roy Weindorf

Description:
View of hand auger sampling
in drain area.

**Photograph No. 2**

Date:
September 4, 2015

Direction of Photo:
West

Photographer:
Roy Weindorf

Description:
View of ground cover and
orchard area.



Photograph No. 3

Date:
September 4, 2015

Direction of Photo:
West

Photographer:
Roy Weindorf

Description:
View of ground cover and orchard area.

**Photograph No. 4**

Date:
September 4, 2015

Direction of Photo:
East

Photographer:
Roy Weindorf

Description:
View of site entrance.



Photograph No. 5

Date:
September 4, 2015

Direction of Photo:
Northeast

Photographer:
Roy Weindorf

Description:
View of hand auger sampling
in drain area.

**Photograph No. 6**

Date:
September 4, 2015

Direction of Photo:
Northeast

Photographer:
Roy Weindorf

Description:
View of sample BO-SO-14-00-
02 location.



Photograph No. 7

Date:
September 4, 2015

Direction of Photo:
North

Photographer:
Roy Weindorf

Description:
View of sample BO-SO-13-00-02 location.

**Photograph No. 8**

Date:
September 4, 2015

Direction of Photo:
West

Photographer:
Roy Weindorf

Description:
View of sample BO-SO-12-00-02 location.



Photograph No. 9

Date:

September 4, 2015

Direction of Photo:

North

Photographer:

Roy Weindorf

Description:

View of sample BO-SO-11-00-02 location.



APPENDIX C
BACKGROUND INFORMATION



Targeted Brownfields Assessment (TBA) Application

EPA Region 8 accepts applications for environmental assessment assistance at brownfields properties on an ongoing basis. To request Region 8's technical assistance, please complete this application. The information provided will be evaluated to determine if the applicant and site meet the selection criteria for the TBA program. EPA will also evaluate whether funding is available to perform the requested assessment within the desired schedule. Applicants will be contacted promptly after this review. For more information on TBAs, please visit: www.epa.gov/region8/brownfields/tba.html

1. Applicant Information

Applicant Organization	Denver Urban Gardens
Contact Person and Title	Jessica Romer, Director of Horticulture
Street Address	1031 33 rd Street, Suite 100
City, State ZIP Code	Denver, CO 80205
Phone	303-292-9900
Fax	
Email Address	jessica@dug.org

2. Site Description and History

Site Name	Barnum Orchard
Address	101 King Street
Acreage	0.22 Acres
Lat/Long Coordinates	39.719221, -105.034138
Current Owner's Name	City of Denver Parks & Recreation
Current Owner's Address	201 W Colfax Ave, Dept. 6014, Denver, CO 80202

- A. Please provide a brief description of the property and the specific assessment(s) you wish to have performed (e.g., Phase I, II and/or cleanup planning):

We would like to have a Phase I and Phase II conducted for the purposes of determining if the site is suitable for the establishing of a community orchard.

- B. When you would like the assessment(s) to be conducted? What is the project timeline?

We would like to assessment to be conducted at the EPA's earliest convenience; the orchard is scheduled to begin construction in mid-August.

- C. Why would you like the assessment(s) conducted? (TBAs can be used to facilitate property acquisitions, meet EPA grant application requirements, characterize contamination for environmental cleanup, among other reasons.)

We would like the assessment to be conducted to determine the safety of the soil in which gardeners will be harvesting food for personal consumption and distribution to food banks.

- D. Describe the environmental conditions at the site, including potential contaminants and a summary of any known past environmental investigations. Describe the past uses of the site.

The site has been vacant since the City of Denver Parks and Recreation acquired it in the 1930's, and potentially beforehand as well, however that is not confirmed. The open channel of Weir Gulch ran right down the middle of the property. At some point, the open channel was completely covered/filled-in over a storm sewer pipe system. The fill dirt is from unknown origins.

- E. Is the applicant the property owner? (**Yes/No**) **NO**.
- F. If not, does the applicant have legal permission to enter the property to conduct the site assessment activities? (**Yes/No**) Note, applicant will be required to secure access. **YES**.
- G. Do you know how and when the contamination occurred? (**Yes/No**) If yes, describe. Note, applicants who are responsible for causing contamination are not eligible for assistance under this program.

Fill dirt is one potential source of contamination, however, we do not know when it was brought in.

- H. Describe any state or federal regulatory involvement at the site related to its environmental condition.

None to our knowledge.

- I. Is there an ongoing or planned state or federal enforcement action or order at the site? (**Yes/No**) **NO**.

If yes, please explain.

- a. Is the site on any state or federal environmental lists, such as the National Priorities Lists (NPL) or the Leaking Underground Storage Tanks (LUST) list? (**Yes/No**) If yes, please explain.
- b. If petroleum contamination is suspected, has the applicant worked with the State or EPA to determine eligibility*? (**Yes/No/NA**) If yes, please explain.

3. Property Reuse and Redevelopment

- A. Describe the anticipated reuse or redevelopment of the property.

Barnum Orchard will be a fruit orchard and berry garden for the Barnum neighborhood community. It is located adjacent to the Lowell Street Community Garden, a well-established food-producing DUG site that was established in 1997. The garden will be filled with apple, peach, plum, cherry and pear trees, with raspberries, strawberries, blackberries, and blueberries growing beneath the trees, all grown by volunteers and open to the community to eat and harvest. Produce not taken by the community will be harvested and donated to food banks. Future plans could include education workshops taught at the garden site by Master Gardeners to show how to grow similar trees and plants in home gardens.

- B. Describe any commitments in place to show this brownfields site will be cleaned up and redeveloped or reused. Please indicate potential or secured funding sources for cleanup and redevelopment.

Denver Urban Gardens is committed to working with the City of Denver Parks and Recreation to establish a community orchard that will serve nearby residents.

- C. Describe how site reuse/redevelopment will benefit the community (e.g., creation of jobs, green space, parks, sustainable/green redevelopment, a catalyst for further redevelopment in the area, etc). Privately owned sites must provide a substantial public benefit.

This community orchard will provide a much-needed source of nutritious food while fostering community relationships through growing and harvesting fruit. The Barnum neighborhood is a food desert, with one small grocery. The neighborhood is home to many newly arrived immigrants, primarily from Latin American, as well as many low-income families. Even if there were local sources for fresh fruit, it might be too expensive for many residents to purchase regularly.

- D. Will the property be sold or transferred to a different entity? If so, please describe.

No, but Denver Urban Gardens does hold a Use Agreement with Denver Parks and Recreation.

- E. Describe the roles of stakeholders in the project, e.g., community organizations, local government involvement, etc.

Community members are actively involved through the registered neighborhood organization, Concerned Citizens for Barnum, as well as through the Sustainable Barnum group, which is organized with the City of Denver's Sustainable Neighborhood Network. Residents are helping to solicit public comment on the orchard design, fundraise as well as volunteer to prepare the garden and plant trees and bushes when the site is ready.

- F. Describe efforts directed towards involving the community in site reuse planning activities.

Neighborhood residents will actively participate in building the community orchard as well as growing, cultivating and harvesting produce. Community residents attended a design review. Denver Urban Garden's Executive Director, a Landscape Architect by trade, incorporated changes based on their feedback to create a space more reflective of resident and neighborhood needs.

4. Additional Information

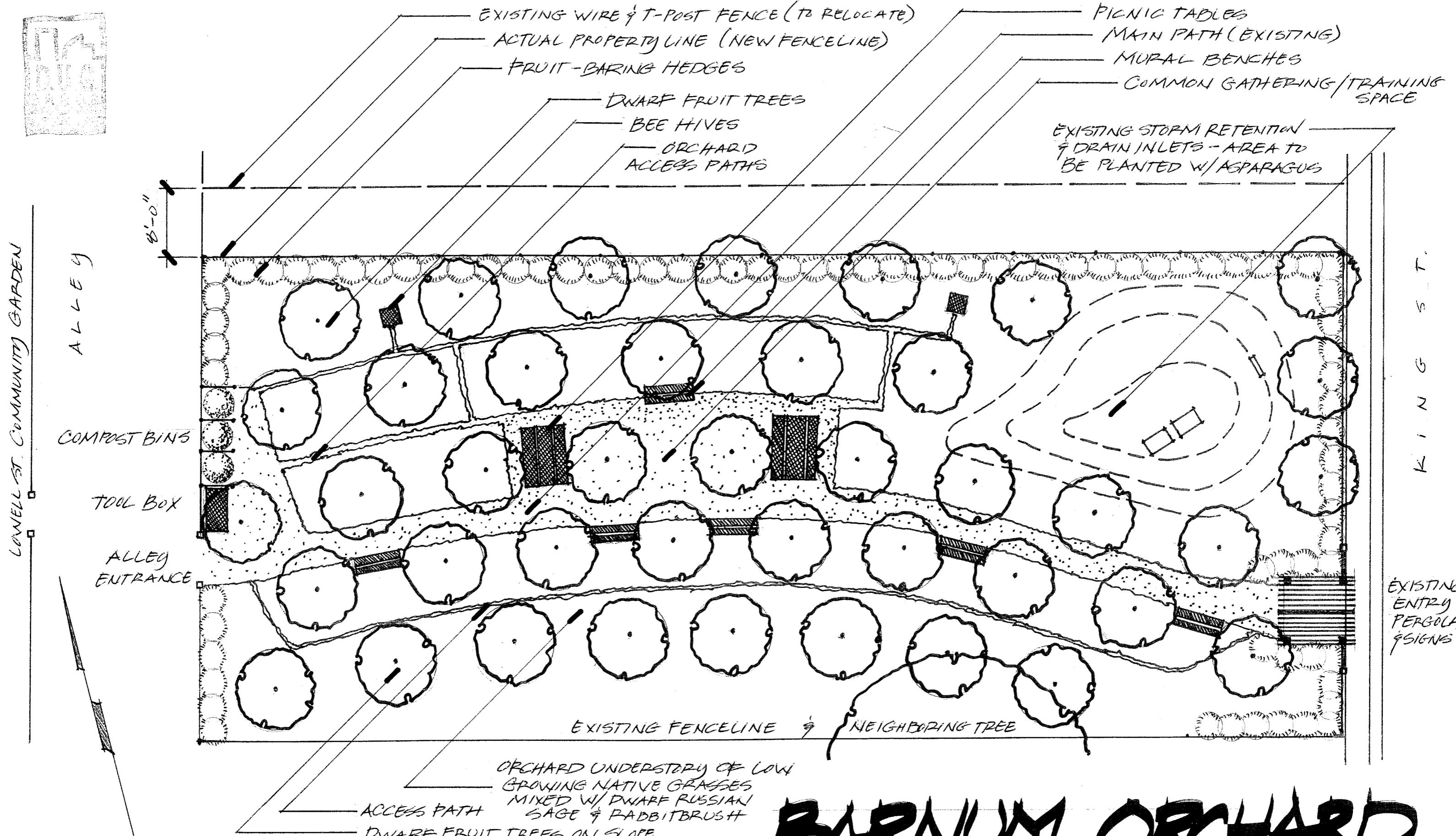
Please email any supporting documentation such as regional and site location maps, photographs, prior site assessment reports and historical environmental information, if available, to the email address provided below.

5. Contact Information

To submit your application or for questions, please contact Bill Rothenmeyer, TBA Program Manager:

Email: rothenmeyer.william@epa.gov
Phone: 303-312-6045
Fax: 303-312-6065

*The Brownfields Law outlines specific criteria by which petroleum sites may be eligible for brownfields funding. Briefly, these criteria are that the site must be of "relatively low risk," there can be no viable responsible party, the applicant cannot be potentially liable for cleaning up the site, and the site must not be subject to a Resource Conservation and Recovery Act (RCRA) corrective action order. If a party is identified as being responsible for the site and that party is financially viable, then the site is not eligible for brownfields grant funds. For more information, visit www.epa.gov/oswer/docs/grants/epa-oswer-oblr-11-05.pdf.



BARNUM ORCHARD

@ KING STREET



APPENDIX D
ANALYTICAL LABORATORY REPORTS



09/24/15

Technical Report for

Weston Solutions, Inc.

DUG

Accutest Job Number: D75022

Sampling Date: 09/10/15

Report to:

Weston Solutions, Inc.
1435 Garrison Street
Lakewood, CO 80215
roy.weindorf@westonsolutions.com

ATTN: Roy Weindorf

Total number of pages in report: **128**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Scott Heideman".

Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY
CO (CO00049), EPA 524.2 Provisional

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Test results relate only to samples analyzed.

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Sample Summary

Weston Solutions, Inc.

Job No: D75022

DUG

Sample Number	Collected Date	Time By	Matrix Received	Code Type	Client Sample ID	
D75022-1	09/10/15	09:30 RW	09/10/15	SO	Soil	BO-SO-01-00-02
D75022-1D	09/10/15	09:30 RW	09/10/15	SO	Soil Dup/MSD	BO-SO-01-00-02
D75022-1M	09/10/15	09:30 RW	09/10/15	SO	Soil Matrix Spike	BO-SO-01-00-02
D75022-2	09/10/15	10:41 RW	09/10/15	SO	Soil	BO-SO-02-02-06
D75022-3	09/10/15	11:57 RW	09/10/15	SO	Soil	BO-SO-03-06-18
D75022-4	09/10/15	09:50 RW	09/10/15	SO	Soil	BO-SO-04-00-02
D75022-5	09/10/15	11:05 RW	09/10/15	SO	Soil	BO-SO-05-02-06
D75022-6	09/10/15	12:14 RW	09/10/15	SO	Soil	BO-SO-06-06-18
D75022-7	09/10/15	10:07 RW	09/10/15	SO	Soil	BO-SO-07-00-02
D75022-8	09/10/15	11:22 RW	09/10/15	SO	Soil	BO-SO-08-02-06
D75022-9	09/10/15	12:27 RW	09/10/15	SO	Soil	BO-SO-09-06-18
D75022-10	09/10/15	10:41 RW	09/10/15	SO	Soil	BO-SO-10-02-06
D75022-11	09/10/15	12:35 RW	09/10/15	SO	Soil	BO-SO-11-00-02

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary

(continued)

Weston Solutions, Inc.

Job No: D75022

DUG

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D75022-11D	09/10/15	12:35 RW	09/10/15	SO	Soil Dup/MSD	BO-SO-11-00-02
D75022-11M	09/10/15	12:35 RW	09/10/15	SO	Soil Matrix Spike	BO-SO-11-00-02
D75022-12	09/10/15	12:37 RW	09/10/15	SO	Soil	BO-SO-12-00-02
D75022-13	09/10/15	12:36 RW	09/10/15	SO	Soil	BO-SO-13-00-02
D75022-14	09/10/15	12:38 RW	09/10/15	SO	Soil	BO-SO-14-00-02
D75022-15	09/10/15	12:38 RW	09/10/15	SO	Soil	BO-SO-15-00-02

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Weston Solutions, Inc.

Job No D75022

Site: DUG

Report Date 9/24/2015 4:02:33 PM

On 09/10/2015, 15 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 5.7 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D75022 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix: SO

Batch ID: N:V3C5628

- The data for SW846 8260C meets quality control requirements.
- D75022-11 through -15: Analysis performed at Accutest Laboratories, Dayton, NJ.

Extractables by GCMS By Method SW846 8270C

Matrix: SO

Batch ID: OP12354

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D75022-11MS, D75022-11MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike (MS) recovery(s) of 3,3'-Dichlorobenzidine, Benzoic Acid are outside control limits. Outside control limits due to possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of 3,3'-Dichlorobenzidine, Benzoic Acid, 2,4-Dinitrophenol are outside control limits. Probable cause due to matrix interference.
- The RPD(s) for the MS and MSD recoveries of 2,4-Dinitrophenol, Hexachlorocyclopentadiene are outside control limits for sample OP12354-MSD. High RPD due to possible sample nonhomogeneity.

Extractables by GC By Method SW846 8081A

Matrix: SO

Batch ID: OP12380

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D75022-1MS, D75022-1MSD were used as the QC samples indicated.
- D75022-1 through -10: Elevated reporting limits due to sample matrix, dilution required during sample analysis.

Metals By Method SW846 6010C

Matrix: SO

Batch ID: MP16910

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D75022-1MS, D75022-1MSD, D75022-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Antimony, Silver are outside control limits. Spike recovery indicates possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of Barium, Silver, Antimony are outside control limits. High RPD due to possible sample matrix or nonhomogeneity.
- The matrix spike (MS) recovery(s) of Aluminum, Iron are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The RPD(s) for the MS and MSD recoveries of Antimony are outside control limits for sample MP16910-S2. High RPD due to possible sample matrix or nonhomogeneity.
- The serial dilution RPD(s) for Arsenic, Beryllium, Cadmium, Thallium, Calcium, Chromium, Cobalt, Iron, Lead, Magnesium, Manganese, Nickel, Vanadium, Zinc are outside control limits for sample MP16910-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- D75022-1 for Silver: Elevated detection limit due to dilution required for possible matrix interference.
- D75022-4 for Selenium: Elevated detection limit due to dilution required for possible matrix interference.
- MP16910-MB1 for Iron: All sample results < RL or > 10x MB concentration.
- MP16910-SD1 for Chromium,Calcium,Nickel, Vanadium,Magnesium,Zinc,Iron, Lead, Manganese, Cobalt: Serial dilution indicates possible matrix interference.
- D75022-2 through -7 for Silver: Elevated detection limit due to dilution required for possible matrix interference.

Matrix: SO

Batch ID: MP16935

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D75080-1MS, D75080-1MSD, D75080-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Silver, Antimony, Barium, Chromium, Magnesium, Nickel, Sodium, Vanadium, Zinc are outside control limits. Spike recovery indicates possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of Antimony, Silver, Sodium are outside control limits. Probable cause due to matrix interference.
- The matrix spike (MS) recovery(s) of Aluminum, Calcium, Iron, Manganese are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The RPD(s) for the MS and MSD recoveries of Calcium are outside control limits for sample MP16935-S2. High RPD due to possible sample matrix or nonhomogeneity.
- The serial dilution RPD(s) for Arsenic, Beryllium, Cadmium, Lead, Thallium, Calcium, Chromium, Cobalt, Iron, Magnesium, Manganese, Nickel, Vanadium, Zinc are outside control limits for sample MP16935-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP16935-SD1 for Calcium,Cobalt,Chromium, Magnesium, Vanadium, Manganese: Serial dilution indicates possible matrix interference.
- MP16935-SD1 for Iron,Nickel, Zinc: Serial dilution indicates possible matrix interference.
- D75022-8,-9,-10 for Silver: Elevated detection limit due to dilution required for possible matrix interference.

Metals By Method SW846 7471B

Matrix: SO

Batch ID: MP16909

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D74858-1MS, D74858-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method SM2540G-2011 M

Matrix: SO

Batch ID: GN31531

- The data for SM2540G-2011 M meets quality control requirements.

Matrix: SO

Batch ID: GN31541

- The data for SM2540G-2011 M meets quality control requirements.

Wet Chemistry By Method SW846 9045D

Matrix: SO

Batch ID: GN31540

- The following samples were run outside of holding time for method SW846 9045D: D75022-1, D75022-10, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Accutest Mountain States

Job No D75022

Site: WESTCOL: DUG

Report Date 9/22/2015 9:24:26 AM

On 09/10/2015, 5 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a maximum corrected temperature of 2.3 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of D75022 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix: SO

Batch ID: V3C5628

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D75022-11MS, D75022-11MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Vinyl Acetate are outside control limits. Outside control limits due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Vinyl Acetate are outside control limits. Outside control limits due to matrix interference.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

Summary of Hits

Page 1 of 8

Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

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Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D75022-1 BO-SO-01-00-02

alpha-Chlordane ^a	17.8	7.3	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	9.4	7.3	3.6	ug/kg	SW846 8081A
4,4'-DDE ^a	5.9 J	7.3	3.6	ug/kg	SW846 8081A
4,4'-DDT ^a	8.4	7.3	4.0	ug/kg	SW846 8081A
Heptachlor epoxide ^a	5.0 J	7.3	3.6	ug/kg	SW846 8081A
Aluminum	13300	11		mg/kg	SW846 6010C
Arsenic	8.8	2.7		mg/kg	SW846 6010C
Barium	229	1.1		mg/kg	SW846 6010C
Beryllium	1.3	1.1		mg/kg	SW846 6010C
Calcium	10600	43		mg/kg	SW846 6010C
Chromium	12.1	1.1		mg/kg	SW846 6010C
Cobalt	8.3	0.54		mg/kg	SW846 6010C
Copper	25.9	1.1		mg/kg	SW846 6010C
Iron	19400	7.5		mg/kg	SW846 6010C
Lead	44.1	5.4		mg/kg	SW846 6010C
Magnesium	3970	21		mg/kg	SW846 6010C
Manganese	453	0.54		mg/kg	SW846 6010C
Nickel	10.4	3.2		mg/kg	SW846 6010C
Potassium	4390	210		mg/kg	SW846 6010C
Sodium	284	43		mg/kg	SW846 6010C
Thallium	3.4	1.1		mg/kg	SW846 6010C
Vanadium	39.9	1.1		mg/kg	SW846 6010C
Zinc	112	3.2		mg/kg	SW846 6010C
pH	7.50			su	SW846 9045D

D75022-2 BO-SO-02-02-06

alpha-Chlordane ^a	15.6	7.2	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	9.6	7.2	3.6	ug/kg	SW846 8081A
4,4'-DDE ^a	6.6 J	7.2	3.6	ug/kg	SW846 8081A
4,4'-DDT ^a	10.6	7.2	4.0	ug/kg	SW846 8081A
Die�drin ^a	5.1 J	7.2	3.6	ug/kg	SW846 8081A
Heptachlor epoxide ^a	4.4 J	7.2	3.6	ug/kg	SW846 8081A
Aluminum	18100	22		mg/kg	SW846 6010C
Arsenic	8.7	2.7		mg/kg	SW846 6010C
Barium	280	1.1		mg/kg	SW846 6010C
Beryllium	1.6	1.1		mg/kg	SW846 6010C
Calcium	11400	43		mg/kg	SW846 6010C
Chromium	12.5	1.1		mg/kg	SW846 6010C
Cobalt	8.9	0.54		mg/kg	SW846 6010C
Copper	30.7	2.2		mg/kg	SW846 6010C
Iron	22100	7.6		mg/kg	SW846 6010C
Lead	40.5	5.4		mg/kg	SW846 6010C

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Magnesium	4420	22			mg/kg	SW846 6010C
Manganese	547	0.54			mg/kg	SW846 6010C
Mercury	0.088	0.083			mg/kg	SW846 7471B
Nickel	10.4	3.2			mg/kg	SW846 6010C
Potassium	4300	220			mg/kg	SW846 6010C
Sodium	392	43			mg/kg	SW846 6010C
Thallium	3.8	1.1			mg/kg	SW846 6010C
Vanadium	48.7	1.1			mg/kg	SW846 6010C
Zinc	126	3.2			mg/kg	SW846 6010C
pH	7.47				su	SW846 9045D

D75022-3 BO-SO-03-06-18

alpha-Chlordane ^a	4.4 J	7.3	3.7	ug/kg	SW846 8081A
4,4'-DDT ^a	4.6 J	7.3	4.0	ug/kg	SW846 8081A
Dieldrin ^a	9.9	7.3	3.7	ug/kg	SW846 8081A
Aluminum	18200	22		mg/kg	SW846 6010C
Arsenic	9.1	2.8		mg/kg	SW846 6010C
Barium	275	1.1		mg/kg	SW846 6010C
Beryllium	1.7	1.1		mg/kg	SW846 6010C
Calcium	12700	44		mg/kg	SW846 6010C
Chromium	13.5	1.1		mg/kg	SW846 6010C
Cobalt	10.4	0.55		mg/kg	SW846 6010C
Copper	26.2	2.2		mg/kg	SW846 6010C
Iron	23300	7.8		mg/kg	SW846 6010C
Lead	34.7	5.5		mg/kg	SW846 6010C
Magnesium	4610	22		mg/kg	SW846 6010C
Manganese	561	0.55		mg/kg	SW846 6010C
Mercury	0.12	0.089		mg/kg	SW846 7471B
Nickel	10.3	3.3		mg/kg	SW846 6010C
Potassium	3470	220		mg/kg	SW846 6010C
Sodium	601	44		mg/kg	SW846 6010C
Thallium	3.7	1.1		mg/kg	SW846 6010C
Vanadium	51.0	1.1		mg/kg	SW846 6010C
Zinc	113	3.3		mg/kg	SW846 6010C
pH	8.13			su	SW846 9045D

D75022-4 BO-SO-04-00-02

alpha-Chlordane ^a	9.8	7.1	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	6.8 J	7.1	3.6	ug/kg	SW846 8081A
4,4'-DDT ^a	3.9 J	7.1	3.9	ug/kg	SW846 8081A
Aluminum	20300	21		mg/kg	SW846 6010C
Arsenic	9.4	2.6		mg/kg	SW846 6010C
Barium	266	1.1		mg/kg	SW846 6010C

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Beryllium		1.4	1.1		mg/kg	SW846 6010C
Calcium		11700	42		mg/kg	SW846 6010C
Chromium		11.2	1.1		mg/kg	SW846 6010C
Cobalt		7.7	0.53		mg/kg	SW846 6010C
Copper		24.1	2.1		mg/kg	SW846 6010C
Iron		20600	7.4		mg/kg	SW846 6010C
Lead		37.6	5.3		mg/kg	SW846 6010C
Magnesium		4070	21		mg/kg	SW846 6010C
Manganese		495	0.53		mg/kg	SW846 6010C
Nickel		8.0	3.2		mg/kg	SW846 6010C
Potassium		4540	210		mg/kg	SW846 6010C
Sodium		321	42		mg/kg	SW846 6010C
Vanadium		45.1	1.1		mg/kg	SW846 6010C
Zinc		113	3.2		mg/kg	SW846 6010C
pH		7.58			su	SW846 9045D

D75022-5 BO-SO-05-02-06

alpha-Chlordane ^a	5.1 J	7.2	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	4.0 J	7.2	3.6	ug/kg	SW846 8081A
4,4' -DDT ^a	5.2 J	7.2	4.0	ug/kg	SW846 8081A
Aluminum	14600	21		mg/kg	SW846 6010C
Arsenic	6.3	2.7		mg/kg	SW846 6010C
Barium	290	1.1		mg/kg	SW846 6010C
Beryllium	1.3	1.1		mg/kg	SW846 6010C
Calcium	10900	43		mg/kg	SW846 6010C
Chromium	10.6	1.1		mg/kg	SW846 6010C
Cobalt	7.1	0.54		mg/kg	SW846 6010C
Copper	24.1	2.1		mg/kg	SW846 6010C
Iron	19200	7.5		mg/kg	SW846 6010C
Lead	34.7	5.4		mg/kg	SW846 6010C
Magnesium	3800	21		mg/kg	SW846 6010C
Manganese	437	0.54		mg/kg	SW846 6010C
Nickel	8.8	3.2		mg/kg	SW846 6010C
Potassium	4070	210		mg/kg	SW846 6010C
Sodium	419	43		mg/kg	SW846 6010C
Thallium	1.4	1.1		mg/kg	SW846 6010C
Vanadium	43.4	1.1		mg/kg	SW846 6010C
Zinc	111	3.2		mg/kg	SW846 6010C
pH	7.54			su	SW846 9045D

D75022-6 BO-SO-06-06-18

alpha-Chlordane ^a	11.0	7.2	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	9.6	7.2	3.6	ug/kg	SW846 8081A

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
4,4'-DDT a		4.8 J	7.2	4.0	ug/kg	SW846 8081A
Aluminum		15000	22		mg/kg	SW846 6010C
Arsenic		6.6	2.7		mg/kg	SW846 6010C
Barium		248	1.1		mg/kg	SW846 6010C
Beryllium		1.5	1.1		mg/kg	SW846 6010C
Calcium		10700	44		mg/kg	SW846 6010C
Chromium		11.1	1.1		mg/kg	SW846 6010C
Cobalt		7.4	0.55		mg/kg	SW846 6010C
Copper		26.2	2.2		mg/kg	SW846 6010C
Iron		20200	7.7		mg/kg	SW846 6010C
Lead		36.7	5.5		mg/kg	SW846 6010C
Magnesium		3700	22		mg/kg	SW846 6010C
Manganese		469	0.55		mg/kg	SW846 6010C
Nickel		7.8	3.3		mg/kg	SW846 6010C
Potassium		3320	220		mg/kg	SW846 6010C
Sodium		359	44		mg/kg	SW846 6010C
Thallium		1.4	1.1		mg/kg	SW846 6010C
Vanadium		47.5	1.1		mg/kg	SW846 6010C
Zinc		115	3.3		mg/kg	SW846 6010C
pH		8.07			su	SW846 9045D

D75022-7 BO-SO-07-00-02

alpha-Chlordane a	6.2 J	7.1	3.6	ug/kg	SW846 8081A
gamma-Chlordane a	5.2 J	7.1	3.6	ug/kg	SW846 8081A
Aluminum	16800	21		mg/kg	SW846 6010C
Arsenic	8.1	2.6		mg/kg	SW846 6010C
Barium	253	1.0		mg/kg	SW846 6010C
Beryllium	1.4	1.0		mg/kg	SW846 6010C
Calcium	10300	42		mg/kg	SW846 6010C
Chromium	11.6	1.0		mg/kg	SW846 6010C
Cobalt	7.4	0.52		mg/kg	SW846 6010C
Copper	24.3	2.1		mg/kg	SW846 6010C
Iron	20300	7.3		mg/kg	SW846 6010C
Lead	41.5	5.2		mg/kg	SW846 6010C
Magnesium	4000	21		mg/kg	SW846 6010C
Manganese	490	0.52		mg/kg	SW846 6010C
Mercury	0.13	0.088		mg/kg	SW846 7471B
Nickel	8.0	3.1		mg/kg	SW846 6010C
Potassium	4620	210		mg/kg	SW846 6010C
Sodium	274	42		mg/kg	SW846 6010C
Thallium	1.6	1.0		mg/kg	SW846 6010C
Vanadium	44.1	1.0		mg/kg	SW846 6010C
Zinc	113	3.1		mg/kg	SW846 6010C
pH	7.38			su	SW846 9045D

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D75022-8 BO-SO-08-02-06

alpha-Chlordane ^a	7.6	7.2	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	5.1 J	7.2	3.6	ug/kg	SW846 8081A
4,4' -DDE ^a	3.7 J	7.2	3.6	ug/kg	SW846 8081A
4,4' -DDT ^a	4.2 J	7.2	3.9	ug/kg	SW846 8081A
Aluminum	17600	21		mg/kg	SW846 6010C
Arsenic	12.5	2.6		mg/kg	SW846 6010C
Barium	265	1.0		mg/kg	SW846 6010C
Beryllium	1.3	1.0		mg/kg	SW846 6010C
Calcium	10500	42		mg/kg	SW846 6010C
Chromium	12.8	1.0		mg/kg	SW846 6010C
Cobalt	8.5	0.52		mg/kg	SW846 6010C
Copper	26.1	2.1		mg/kg	SW846 6010C
Iron	22000	7.3		mg/kg	SW846 6010C
Lead	39.7	5.2		mg/kg	SW846 6010C
Magnesium	3970	21		mg/kg	SW846 6010C
Manganese	523	0.52		mg/kg	SW846 6010C
Nickel	8.8	3.1		mg/kg	SW846 6010C
Potassium	4310	210		mg/kg	SW846 6010C
Sodium	280	42		mg/kg	SW846 6010C
Thallium	4.6	1.0		mg/kg	SW846 6010C
Vanadium	48.2	1.0		mg/kg	SW846 6010C
Zinc	120	3.1		mg/kg	SW846 6010C
pH	7.43			su	SW846 9045D

D75022-9 BO-SO-09-06-18

alpha-Chlordane ^a	5.3 J	7.3	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	4.2 J	7.3	3.6	ug/kg	SW846 8081A
Aluminum	15700	20		mg/kg	SW846 6010C
Arsenic	7.9	2.5		mg/kg	SW846 6010C
Barium	258	1.0		mg/kg	SW846 6010C
Beryllium	1.4	1.0		mg/kg	SW846 6010C
Calcium	12900	41		mg/kg	SW846 6010C
Chromium	12.5	1.0		mg/kg	SW846 6010C
Cobalt	8.2	0.51		mg/kg	SW846 6010C
Copper	23.8	2.0		mg/kg	SW846 6010C
Iron	22200	7.1		mg/kg	SW846 6010C
Lead	36.1	5.1		mg/kg	SW846 6010C
Magnesium	4690	20		mg/kg	SW846 6010C
Manganese	550	0.51		mg/kg	SW846 6010C
Nickel	8.2	3.1		mg/kg	SW846 6010C
Potassium	3470	200		mg/kg	SW846 6010C

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						

Sodium	393	41		mg/kg	SW846 6010C
Thallium	4.0	1.0		mg/kg	SW846 6010C
Vanadium	51.6	1.0		mg/kg	SW846 6010C
Zinc	102	3.1		mg/kg	SW846 6010C
pH	8.05			su	SW846 9045D

D75022-10 BO-SO-10-02-06

alpha-Chlordane a	11.8	7.3	3.6	ug/kg	SW846 8081A
gamma-Chlordane a	9.1	7.3	3.6	ug/kg	SW846 8081A
4,4'-DDD a	4.0 J	7.3	3.6	ug/kg	SW846 8081A
4,4'-DDE a	5.8 J	7.3	3.6	ug/kg	SW846 8081A
4,4'-DDT a	7.0 J	7.3	4.0	ug/kg	SW846 8081A
Dieldrin a	5.5 J	7.3	3.6	ug/kg	SW846 8081A
Heptachlor epoxide a	3.9 J	7.3	3.6	ug/kg	SW846 8081A
Aluminum	16200	21		mg/kg	SW846 6010C
Arsenic	10.2	2.6		mg/kg	SW846 6010C
Barium	274	1.1		mg/kg	SW846 6010C
Beryllium	1.4	1.1		mg/kg	SW846 6010C
Calcium	10900	42		mg/kg	SW846 6010C
Chromium	13.6	1.1		mg/kg	SW846 6010C
Cobalt	8.4	0.53		mg/kg	SW846 6010C
Copper	29.1	2.1		mg/kg	SW846 6010C
Iron	21800	7.4		mg/kg	SW846 6010C
Lead	40.3	5.3		mg/kg	SW846 6010C
Magnesium	4150	21		mg/kg	SW846 6010C
Manganese	501	0.53		mg/kg	SW846 6010C
Mercury	0.14	0.088		mg/kg	SW846 7471B
Nickel	11.2	3.2		mg/kg	SW846 6010C
Potassium	4240	210		mg/kg	SW846 6010C
Sodium	337	42		mg/kg	SW846 6010C
Thallium	3.8	1.1		mg/kg	SW846 6010C
Vanadium	48.3	1.1		mg/kg	SW846 6010C
Zinc	118	3.2		mg/kg	SW846 6010C
pH	7.37			su	SW846 9045D

D75022-11 BO-SO-11-00-02

Anthracene	147	70	20	ug/kg	SW846 8270C
Benzo(a)anthracene	41.8 J	70	18	ug/kg	SW846 8270C
Benzo(b)fluoranthene	143	70	18	ug/kg	SW846 8270C
Benzo(k)fluoranthene	126	70	18	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	111	70	18	ug/kg	SW846 8270C
Chrysene	57.2 J	70	21	ug/kg	SW846 8270C
bis(2-Ethylhexyl)phthalate	123	70	18	ug/kg	SW846 8270C

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

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Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						

Fluoranthene	197	70	18	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	123 J	140	35	ug/kg	SW846 8270C
Phenanthrene	156	70	21	ug/kg	SW846 8270C
Pyrene	145	70	18	ug/kg	SW846 8270C

D75022-12 BO-SO-12-00-02

Acetone ^b	4.9 J	10	2.3	ug/kg	SW846 8260C
Anthracene	141	68	20	ug/kg	SW846 8270C
Benzo(a)anthracene	41.6 J	68	17	ug/kg	SW846 8270C
Benzo(b)fluoranthene	160	68	17	ug/kg	SW846 8270C
Benzo(k)fluoranthene	126	68	17	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	123	68	17	ug/kg	SW846 8270C
Chrysene	78.2	68	20	ug/kg	SW846 8270C
bis(2-Ethylhexyl)phthalate	70.5	68	17	ug/kg	SW846 8270C
Fluoranthene	199	68	17	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	135 J	140	34	ug/kg	SW846 8270C
Phenanthrene	150	68	20	ug/kg	SW846 8270C
Pyrene	158	68	17	ug/kg	SW846 8270C

D75022-13 BO-SO-13-00-02

Styrene ^b	0.27 J	2.3	0.20	ug/kg	SW846 8260C
Anthracene	67.4 J	75	22	ug/kg	SW846 8270C
Benzo(a)anthracene	65.7 J	75	19	ug/kg	SW846 8270C
Benzo(b)fluoranthene	201	75	19	ug/kg	SW846 8270C
Benzo(k)fluoranthene	56.5 J	75	19	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	127	75	19	ug/kg	SW846 8270C
Chrysene	137	75	23	ug/kg	SW846 8270C
Dibenz(a,h)anthracene	64.2 J	75	19	ug/kg	SW846 8270C
bis(2-Ethylhexyl)phthalate	191	75	19	ug/kg	SW846 8270C
Fluoranthene	219	75	19	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	152	150	38	ug/kg	SW846 8270C
Phenanthrene	108	75	22	ug/kg	SW846 8270C
Pyrene	216	75	19	ug/kg	SW846 8270C

D75022-14 BO-SO-14-00-02

Acetone ^b	3.8 J	10	2.4	ug/kg	SW846 8260C
Acenaphthylene	35.7 J	70	26	ug/kg	SW846 8270C
Anthracene	69.0 J	70	20	ug/kg	SW846 8270C
Benzo(a)anthracene	83.9	70	17	ug/kg	SW846 8270C
Benzo(b)fluoranthene	164	70	17	ug/kg	SW846 8270C
Benzo(k)fluoranthene	45.3 J	70	17	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	105	70	17	ug/kg	SW846 8270C

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Butyl benzyl phthalate		67.2 J	70	31	ug/kg	SW846 8270C
Chrysene		138	70	21	ug/kg	SW846 8270C
bis(2-Ethylhexyl)phthalate		615	70	17	ug/kg	SW846 8270C
Fluoranthene		230	70	17	ug/kg	SW846 8270C
Fluorene		45.2 J	70	23	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene		131 J	140	35	ug/kg	SW846 8270C
Phenanthrene		128	70	21	ug/kg	SW846 8270C
Pyrene		165	70	17	ug/kg	SW846 8270C

D75022-15 BO-SO-15-00-02

Acenaphthylene	35.4 J	69	26	ug/kg	SW846 8270C
Anthracene	67.9 J	69	20	ug/kg	SW846 8270C
Benzo(a)anthracene	91.1	69	17	ug/kg	SW846 8270C
Benzo(b)fluoranthene	182	69	17	ug/kg	SW846 8270C
Benzo(k)fluoranthene	60.1 J	69	17	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	119	69	17	ug/kg	SW846 8270C
Butyl benzyl phthalate	128	69	31	ug/kg	SW846 8270C
Chrysene	149	69	21	ug/kg	SW846 8270C
Di-n-butyl phthalate	52.4 J	69	17	ug/kg	SW846 8270C
bis(2-Ethylhexyl)phthalate	444	69	17	ug/kg	SW846 8270C
Fluoranthene	244	69	17	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	154	140	35	ug/kg	SW846 8270C
Naphthalene	41.9 J	69	28	ug/kg	SW846 8270C
Phenanthrene	126	69	20	ug/kg	SW846 8270C
Pyrene	178	69	17	ug/kg	SW846 8270C

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

(b) Analysis performed at Accutest Laboratories, Dayton, NJ.



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Sample Results

Report of Analysis

Report of Analysis

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Client Sample ID:	BO-SO-01-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-1	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.3
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25231.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.3	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.3	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.3	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.3	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.3	3.6	ug/kg	
5103-71-9	alpha-Chlordane	17.8	7.3	3.6	ug/kg	
5103-74-2	gamma-Chlordane	9.4	7.3	3.6	ug/kg	
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.3	3.6	ug/kg	
72-55-9	4,4'-DDE	5.9	7.3	3.6	ug/kg	J
50-29-3	4,4'-DDT	8.4	7.3	4.0	ug/kg	
60-57-1	Dieldrin	ND	7.3	3.6	ug/kg	
72-20-8	Endrin	ND	7.3	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.3	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.3	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.3	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.3	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.3	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.3	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	5.0	7.3	3.6	ug/kg	J
72-43-5	Methoxychlor	ND	7.3	5.5	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	83%		45-156%
877-09-8	Tetrachloro-m-xylene	83%		45-156%
2051-24-3	Decachlorobiphenyl	114%		41-179%
2051-24-3	Decachlorobiphenyl	105%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	BO-SO-01-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-1	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.3
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	13300	11	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Antimony	< 3.2	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Arsenic	8.8	2.7	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Barium	229	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Beryllium	1.3	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Calcium	10600	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Chromium	12.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cobalt	8.3	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Copper	25.9	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Iron	19400	7.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Lead	44.1	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Magnesium	3970	21	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Manganese	453	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Mercury	< 0.086	0.086	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁴
Nickel	10.4	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Potassium	4390	210	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Selenium	< 5.4	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Silver ^a	< 6.4	6.4	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Sodium	284	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Thallium	3.4	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Vanadium	39.9	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Zinc	112	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Prep QC Batch: MP16909

(5) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-01-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-1	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.3
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	91.3		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.50		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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4.2
4**Client Sample ID:** BO-SO-02-02-06**Lab Sample ID:** D75022-2**Matrix:** SO - Soil**Method:** SW846 8081A SW846 3546**Project:** DUG**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 92.7

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	GEH25233.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.2	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.2	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.2	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.2	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.2	3.6	ug/kg	
5103-71-9	alpha-Chlordane	15.6	7.2	3.6	ug/kg	
5103-74-2	gamma-Chlordane	9.6	7.2	3.6	ug/kg	
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.2	3.6	ug/kg	
72-55-9	4,4'-DDE	6.6	7.2	3.6	ug/kg	J
50-29-3	4,4'-DDT	10.6	7.2	4.0	ug/kg	
60-57-1	Dieldrin	5.1	7.2	3.6	ug/kg	J
72-20-8	Endrin	ND	7.2	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.2	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.2	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.2	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.2	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.2	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.2	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	4.4	7.2	3.6	ug/kg	J
72-43-5	Methoxychlor	ND	7.2	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		45-156%
877-09-8	Tetrachloro-m-xylene	77%		45-156%
2051-24-3	Decachlorobiphenyl	99%		41-179%
2051-24-3	Decachlorobiphenyl	99%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: BO-SO-02-02-06**Lab Sample ID:** D75022-2**Matrix:** SO - Soil**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 92.7**Project:** DUG**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	18100	22	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Antimony	< 3.2	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Arsenic	8.7	2.7	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Barium	280	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Beryllium	1.6	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Calcium	11400	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Chromium	12.5	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cobalt	8.9	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Copper	30.7	2.2	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Iron	22100	7.6	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Lead	40.5	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Magnesium	4420	22	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Manganese	547	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Mercury	0.088	0.083	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁴
Nickel	10.4	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Potassium	4300	220	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Selenium	< 5.4	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Silver ^a	< 6.5	6.5	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Sodium	392	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Thallium	3.8	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Vanadium	48.7	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Zinc	126	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Prep QC Batch: MP16909

(5) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-02-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-2	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	92.7
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	92.7		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.47		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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4.3
4

Client Sample ID:	BO-SO-03-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-3	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.1
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25234.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.3	3.7	ug/kg	
319-84-6	alpha-BHC	ND	7.3	3.7	ug/kg	
319-85-7	beta-BHC	ND	7.3	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.3	3.7	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.3	3.7	ug/kg	
5103-71-9	alpha-Chlordane	4.4	7.3	3.7	ug/kg	J
5103-74-2	gamma-Chlordane	ND	7.3	3.7	ug/kg	
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.3	3.7	ug/kg	
72-55-9	4,4'-DDE	ND	7.3	3.7	ug/kg	
50-29-3	4,4'-DDT	4.6	7.3	4.0	ug/kg	J
60-57-1	Dieldrin	9.9	7.3	3.7	ug/kg	
72-20-8	Endrin	ND	7.3	3.7	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.3	3.7	ug/kg	
53494-70-5	Endrin ketone	ND	7.3	3.7	ug/kg	
959-98-8	Endosulfan-I	ND	7.3	3.7	ug/kg	
33213-65-9	Endosulfan-II	ND	7.3	3.7	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.3	3.7	ug/kg	
76-44-8	Heptachlor	ND	7.3	3.7	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.3	3.7	ug/kg	
72-43-5	Methoxychlor	ND	7.3	5.5	ug/kg	
8001-35-2	Toxaphene	ND	370	260	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		45-156%
877-09-8	Tetrachloro-m-xylene	80%		45-156%
2051-24-3	Decachlorobiphenyl	145%		41-179%
2051-24-3	Decachlorobiphenyl	93%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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4.3
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Client Sample ID:	BO-SO-03-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-3	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.1
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	18200	22	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Antimony	< 3.3	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Arsenic	9.1	2.8	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Barium	275	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Beryllium	1.7	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Calcium	12700	44	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Chromium	13.5	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cobalt	10.4	0.55	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Copper	26.2	2.2	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Iron	23300	7.8	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Lead	34.7	5.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Magnesium	4610	22	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Manganese	561	0.55	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Mercury	0.12	0.089	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁴
Nickel	10.3	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Potassium	3470	220	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Selenium	< 5.5	5.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Silver ^a	< 6.7	6.7	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Sodium	601	44	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Thallium	3.7	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Vanadium	51.0	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Zinc	113	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Prep QC Batch: MP16909

(5) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-03-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-3	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.1
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	91.1		%	1	09/14/15	SWT	SM2540G-2011 M
pH	8.13		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-04-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-4	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.7
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25235.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.1	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.1	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.1	3.9	ug/kg	
319-86-8	delta-BHC	ND	7.1	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.1	3.6	ug/kg	
5103-71-9	alpha-Chlordane	9.8	7.1	3.6	ug/kg	
5103-74-2	gamma-Chlordane	6.8	7.1	3.6	ug/kg	J
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.1	3.6	ug/kg	
72-55-9	4,4'-DDE	ND	7.1	3.6	ug/kg	
50-29-3	4,4'-DDT	3.9	7.1	3.9	ug/kg	J
60-57-1	Dieldrin	ND	7.1	3.6	ug/kg	
72-20-8	Endrin	ND	7.1	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.1	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.1	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.1	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.1	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.1	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.1	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.1	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.1	5.3	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		45-156%
877-09-8	Tetrachloro-m-xylene	77%		45-156%
2051-24-3	Decachlorobiphenyl	98%		41-179%
2051-24-3	Decachlorobiphenyl	86%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-04-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-4	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.7
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	20300	21	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Antimony	< 3.2	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Arsenic	9.4	2.6	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Barium	266	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Beryllium	1.4	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Calcium	11700	42	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Chromium	11.2	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cobalt	7.7	0.53	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Copper	24.1	2.1	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Iron	20600	7.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Lead	37.6	5.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Magnesium	4070	21	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Manganese	495	0.53	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Mercury	< 0.083	0.083	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁵
Nickel	8.0	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Potassium	4540	210	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Selenium ^a	< 11	11	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Silver ^a	< 32	32	mg/kg	10	09/15/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Sodium	321	42	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Thallium	< 1.1	1.1	mg/kg	1	09/15/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Vanadium	45.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Zinc	113	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶

- (1) Instrument QC Batch: MA6528
- (2) Instrument QC Batch: MA6536
- (3) Instrument QC Batch: MA6540
- (4) Instrument QC Batch: MA6552
- (5) Prep QC Batch: MP16909
- (6) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-04-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-4	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.7
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	93.7		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.58		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-05-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-5	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	92.3
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25236.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.2	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.2	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.2	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.2	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.2	3.6	ug/kg	
5103-71-9	alpha-Chlordane	5.1	7.2	3.6	ug/kg	J
5103-74-2	gamma-Chlordane	4.0	7.2	3.6	ug/kg	J
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.2	3.6	ug/kg	
72-55-9	4,4'-DDE	ND	7.2	3.6	ug/kg	
50-29-3	4,4'-DDT	5.2	7.2	4.0	ug/kg	J
60-57-1	Dieldrin	ND	7.2	3.6	ug/kg	
72-20-8	Endrin	ND	7.2	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.2	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.2	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.2	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.2	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.2	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.2	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.2	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.2	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	89%		45-156%
877-09-8	Tetrachloro-m-xylene	87%		45-156%
2051-24-3	Decachlorobiphenyl	130%		41-179%
2051-24-3	Decachlorobiphenyl	99%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: BO-SO-05-02-06**Lab Sample ID:** D75022-5**Matrix:** SO - Soil**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 92.3**Project:** DUG**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	14600	21	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Antimony	< 3.2	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Arsenic	6.3	2.7	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Barium	290	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Beryllium	1.3	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Calcium	10900	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Chromium	10.6	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cobalt	7.1	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Copper	24.1	2.1	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Iron	19200	7.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Lead	34.7	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Magnesium	3800	21	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Manganese	437	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Mercury	< 0.087	0.087	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁵
Nickel	8.8	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Potassium	4070	210	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Selenium	< 5.4	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Silver ^a	< 6.4	6.4	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Sodium	419	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Thallium	1.4	1.1	mg/kg	1	09/15/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Vanadium	43.4	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Zinc	111	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Instrument QC Batch: MA6552

(5) Prep QC Batch: MP16909

(6) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID: BO-SO-05-02-06**Lab Sample ID:** D75022-5**Matrix:** SO - Soil**Project:** DUG**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 92.3**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	92.3		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.54		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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4

Client Sample ID:	BO-SO-06-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-6	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	92.0
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25237.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.2	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.2	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.2	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.2	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.2	3.6	ug/kg	
5103-71-9	alpha-Chlordane	11.0	7.2	3.6	ug/kg	
5103-74-2	gamma-Chlordane	9.6	7.2	3.6	ug/kg	
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.2	3.6	ug/kg	
72-55-9	4,4'-DDE	ND	7.2	3.6	ug/kg	
50-29-3	4,4'-DDT	4.8	7.2	4.0	ug/kg	J
60-57-1	Dieldrin	ND	7.2	3.6	ug/kg	
72-20-8	Endrin	ND	7.2	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.2	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.2	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.2	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.2	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.2	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.2	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.2	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.2	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%		45-156%
877-09-8	Tetrachloro-m-xylene	84%		45-156%
2051-24-3	Decachlorobiphenyl	101%		41-179%
2051-24-3	Decachlorobiphenyl	86%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-06-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-6	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	92.0
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	15000	22	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Antimony	< 3.3	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Arsenic	6.6	2.7	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Barium	248	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Beryllium	1.5	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Calcium	10700	44	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Chromium	11.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cobalt	7.4	0.55	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Copper	26.2	2.2	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Iron	20200	7.7	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Lead	36.7	5.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Magnesium	3700	22	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Manganese	469	0.55	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Mercury	< 0.085	0.085	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁵
Nickel	7.8	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Potassium	3320	220	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Selenium	< 5.5	5.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Silver ^a	< 6.6	6.6	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Sodium	359	44	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Thallium	1.4	1.1	mg/kg	1	09/15/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Vanadium	47.5	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Zinc	115	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶

- (1) Instrument QC Batch: MA6528
- (2) Instrument QC Batch: MA6536
- (3) Instrument QC Batch: MA6540
- (4) Instrument QC Batch: MA6552
- (5) Prep QC Batch: MP16909
- (6) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

Page 1 of 1

Client Sample ID:	BO-SO-06-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-6	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	92.0
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	92		%	1	09/14/15	SWT	SM2540G-2011 M
pH	8.07		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-07-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-7	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.5
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25238.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.1	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.1	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.1	3.9	ug/kg	
319-86-8	delta-BHC	ND	7.1	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.1	3.6	ug/kg	
5103-71-9	alpha-Chlordane	6.2	7.1	3.6	ug/kg	J
5103-74-2	gamma-Chlordane	5.2	7.1	3.6	ug/kg	J
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.1	3.6	ug/kg	
72-55-9	4,4'-DDE	ND	7.1	3.6	ug/kg	
50-29-3	4,4'-DDT	ND	7.1	3.9	ug/kg	
60-57-1	Dieldrin	ND	7.1	3.6	ug/kg	
72-20-8	Endrin	ND	7.1	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.1	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.1	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.1	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.1	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.1	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.1	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.1	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.1	5.3	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		45-156%
877-09-8	Tetrachloro-m-xylene	77%		45-156%
2051-24-3	Decachlorobiphenyl	102%		41-179%
2051-24-3	Decachlorobiphenyl	91%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	BO-SO-07-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-7	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.5
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	16800	21	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Antimony	< 3.1	3.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Arsenic	8.1	2.6	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Barium	253	1.0	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Beryllium	1.4	1.0	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cadmium	< 1.0	1.0	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Calcium	10300	42	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Chromium	11.6	1.0	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cobalt	7.4	0.52	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Copper	24.3	2.1	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Iron	20300	7.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Lead	41.5	5.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Magnesium	4000	21	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Manganese	490	0.52	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Mercury	0.13	0.088	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁵
Nickel	8.0	3.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Potassium	4620	210	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Selenium	< 5.2	5.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Silver ^a	< 6.2	6.2	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Sodium	274	42	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Thallium	1.6	1.0	mg/kg	1	09/15/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Vanadium	44.1	1.0	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Zinc	113	3.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶

- (1) Instrument QC Batch: MA6528
- (2) Instrument QC Batch: MA6536
- (3) Instrument QC Batch: MA6540
- (4) Instrument QC Batch: MA6552
- (5) Prep QC Batch: MP16909
- (6) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

Page 1 of 1

Client Sample ID:	BO-SO-07-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-7	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.5
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	93.5		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.38		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-08-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-8	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.0
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25239.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.2	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.2	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.2	3.9	ug/kg	
319-86-8	delta-BHC	ND	7.2	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.2	3.6	ug/kg	
5103-71-9	alpha-Chlordane	7.6	7.2	3.6	ug/kg	
5103-74-2	gamma-Chlordane	5.1	7.2	3.6	ug/kg	J
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.2	3.6	ug/kg	
72-55-9	4,4'-DDE	3.7	7.2	3.6	ug/kg	J
50-29-3	4,4'-DDT	4.2	7.2	3.9	ug/kg	J
60-57-1	Dieldrin	ND	7.2	3.6	ug/kg	
72-20-8	Endrin	ND	7.2	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.2	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.2	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.2	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.2	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.2	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.2	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.2	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.2	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		45-156%
877-09-8	Tetrachloro-m-xylene	88%		45-156%
2051-24-3	Decachlorobiphenyl	114%		41-179%
2051-24-3	Decachlorobiphenyl	103%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	BO-SO-08-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-8	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.0
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	17600	21	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Antimony	< 3.1	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Arsenic	12.5	2.6	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Barium	265	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Beryllium	1.3	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cadmium	< 1.0	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Calcium	10500	42	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Chromium	12.8	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cobalt	8.5	0.52	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Copper	26.1	2.1	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Iron	22000	7.3	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Lead	39.7	5.2	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Magnesium	3970	21	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Manganese	523	0.52	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Mercury	< 0.084	0.084	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁵
Nickel	8.8	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Potassium	4310	210	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Selenium	< 5.2	5.2	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Silver ^a	< 31	31	mg/kg	10	09/16/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Sodium	280	42	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Thallium	4.6	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Vanadium	48.2	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Zinc	120	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶

- (1) Instrument QC Batch: MA6528
- (2) Instrument QC Batch: MA6536
- (3) Instrument QC Batch: MA6540
- (4) Instrument QC Batch: MA6552
- (5) Prep QC Batch: MP16909
- (6) Prep QC Batch: MP16935

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

Page 1 of 1

Client Sample ID:	BO-SO-08-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-8	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.0
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	93		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.43		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

Page 1 of 1

Client Sample ID:	BO-SO-09-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-9	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.9
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25240.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.3	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.3	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.3	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.3	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.3	3.6	ug/kg	
5103-71-9	alpha-Chlordane	5.3	7.3	3.6	ug/kg	J
5103-74-2	gamma-Chlordane	4.2	7.3	3.6	ug/kg	J
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.3	3.6	ug/kg	
72-55-9	4,4'-DDE	ND	7.3	3.6	ug/kg	
50-29-3	4,4'-DDT	ND	7.3	4.0	ug/kg	
60-57-1	Dieldrin	ND	7.3	3.6	ug/kg	
72-20-8	Endrin	ND	7.3	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.3	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.3	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.3	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.3	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.3	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.3	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.3	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.3	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	91%		45-156%
877-09-8	Tetrachloro-m-xylene	89%		45-156%
2051-24-3	Decachlorobiphenyl	107%		41-179%
2051-24-3	Decachlorobiphenyl	100%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: BO-SO-09-06-18**Lab Sample ID:** D75022-9**Matrix:** SO - Soil**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 91.9**Project:** DUG**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	15700	20	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Antimony	< 3.1	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Arsenic	7.9	2.5	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Barium	258	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Beryllium	1.4	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cadmium	< 1.0	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Calcium	12900	41	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Chromium	12.5	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cobalt	8.2	0.51	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Copper	23.8	2.0	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Iron	22200	7.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Lead	36.1	5.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Magnesium	4690	20	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Manganese	550	0.51	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Mercury	< 0.084	0.084	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁴
Nickel	8.2	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Potassium	3470	200	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Selenium	< 5.1	5.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Silver ^a	< 6.1	6.1	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Sodium	393	41	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Thallium	4.0	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Vanadium	51.6	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Zinc	102	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Prep QC Batch: MP16909

(5) Prep QC Batch: MP16935

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

Page 1 of 1

Client Sample ID:	BO-SO-09-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-9	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.9
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	91.9		%	1	09/14/15	SWT	SM2540G-2011 M
pH	8.05		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

Page 1 of 1

Client Sample ID: BO-SO-10-02-06**Lab Sample ID:** D75022-10**Matrix:** SO - Soil**Method:** SW846 8081A SW846 3546**Project:** DUG**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 91.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25241.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.3	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.3	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.3	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.3	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.3	3.6	ug/kg	
5103-71-9	alpha-Chlordane	11.8	7.3	3.6	ug/kg	
5103-74-2	gamma-Chlordane	9.1	7.3	3.6	ug/kg	
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	4.0	7.3	3.6	ug/kg	J
72-55-9	4,4'-DDE	5.8	7.3	3.6	ug/kg	J
50-29-3	4,4'-DDT	7.0	7.3	4.0	ug/kg	J
60-57-1	Dieldrin	5.5	7.3	3.6	ug/kg	J
72-20-8	Endrin	ND	7.3	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.3	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.3	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.3	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.3	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.3	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.3	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	3.9	7.3	3.6	ug/kg	J
72-43-5	Methoxychlor	ND	7.3	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		45-156%
877-09-8	Tetrachloro-m-xylene	80%		45-156%
2051-24-3	Decachlorobiphenyl	111%		41-179%
2051-24-3	Decachlorobiphenyl	88%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.10
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Report of Analysis

Page 1 of 1

Client Sample ID: BO-SO-10-02-06**Lab Sample ID:** D75022-10**Matrix:** SO - Soil**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 91.5**Project:** DUG**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	16200	21	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Antimony	< 3.2	3.2	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Arsenic	10.2	2.6	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Barium	274	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Beryllium	1.4	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cadmium	< 1.1	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Calcium	10900	42	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Chromium	13.6	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cobalt	8.4	0.53	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Copper	29.1	2.1	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Iron	21800	7.4	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Lead	40.3	5.3	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Magnesium	4150	21	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Manganese	501	0.53	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Mercury	0.14	0.088	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁴
Nickel	11.2	3.2	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Potassium	4240	210	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Selenium	< 5.3	5.3	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Silver ^a	< 6.3	6.3	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Sodium	337	42	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Thallium	3.8	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Vanadium	48.3	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Zinc	118	3.2	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Prep QC Batch: MP16909

(5) Prep QC Batch: MP16935

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

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Report of Analysis

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Client Sample ID:	BO-SO-10-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-10	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.5
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	91.5		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.37		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

4.10

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Report of Analysis

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Client Sample ID: BO-SO-11-00-02
Lab Sample ID: D75022-11
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 94.7

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	3C123206.D	1	09/15/15	ANJ	n/a	n/a	N:V3C5628

Initial Weight	
Run #1	4.8 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	11	2.5	ug/kg	
71-43-2	Benzene	ND	0.55	0.15	ug/kg	
75-27-4	Bromodichloromethane	ND	2.2	0.17	ug/kg	
75-25-2	Bromoform	ND	5.5	0.26	ug/kg	
74-83-9	Bromomethane	ND	5.5	0.40	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	2.1	ug/kg	
75-15-0	Carbon disulfide	ND	2.2	0.25	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.2	0.25	ug/kg	
108-90-7	Chlorobenzene	ND	2.2	0.17	ug/kg	
75-00-3	Chloroethane	ND	5.5	0.53	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	27	1.2	ug/kg	
67-66-3	Chloroform	ND	2.2	0.16	ug/kg	
74-87-3	Chloromethane	ND	5.5	0.29	ug/kg	
124-48-1	Dibromochloromethane	ND	2.2	0.23	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.13	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.17	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.25	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.16	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.15	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.65	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.86	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.65	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.2	0.26	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.2	0.13	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	0.19	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.18	ug/kg	
591-78-6	2-Hexanone	ND	5.5	1.5	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.5	0.50	ug/kg	
75-09-2	Methylene chloride	ND	5.5	1.1	ug/kg	
100-42-5	Styrene	ND	2.2	0.20	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	0.19	ug/kg	
127-18-4	Tetrachloroethene	ND	2.2	0.33	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.11
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Report of Analysis

Page 2 of 2

Client Sample ID: BO-SO-11-00-02
Lab Sample ID: D75022-11
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 94.7

CAS No.	Compound	Result	RL	MDL	Units	Q
108-88-3	Toluene	ND	1.1	0.23	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.2	0.16	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.2	0.16	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.16	ug/kg	
108-05-4	Vinyl Acetate	ND	11	1.9	ug/kg	
75-01-4	Vinyl chloride	ND	2.2	0.22	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.30	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		70-122%
17060-07-0	1,2-Dichloroethane-D4	108%		68-124%
2037-26-5	Toluene-D8	100%		77-125%
460-00-4	4-Bromofluorobenzene	92%		72-130%

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 3

Client Sample ID:	BO-SO-11-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-11	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	94.7
Method:	SW846 8270C SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G125885.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	700	530	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	70	20	ug/kg	
95-57-8	2-Chlorophenol	ND	70	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	70	25	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	70	21	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	350	180	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	700	530	ug/kg	
95-48-7	2-Methylphenol	ND	70	27	ug/kg	
106-44-5	4-Methylphenol	ND	70	28	ug/kg	
88-75-5	2-Nitrophenol	ND	180	70	ug/kg	
100-02-7	4-Nitrophenol	ND	350	250	ug/kg	
87-86-5	Pentachlorophenol	ND	350	180	ug/kg	
108-95-2	Phenol	ND	70	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	70	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	70	24	ug/kg	
83-32-9	Acenaphthene	ND	70	27	ug/kg	
208-96-8	Acenaphthylene	ND	70	27	ug/kg	
120-12-7	Anthracene	147	70	20	ug/kg	
56-55-3	Benzo(a)anthracene	41.8	70	18	ug/kg	J
205-99-2	Benzo(b)fluoranthene	143	70	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	126	70	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	111	70	18	ug/kg	
50-32-8	Benzo(a)pyrene	ND	70	18	ug/kg	
100-51-6	Benzyl Alcohol	ND	70	26	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	70	25	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	70	31	ug/kg	
106-47-8	4-Chloroaniline	ND	70	35	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	70	27	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	70	33	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	70	30	ug/kg	
91-58-7	2-Chloronaphthalene	ND	70	23	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	70	26	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.11
4

Report of Analysis

Client Sample ID:	BO-SO-11-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-11	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	94.7
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	57.2	70	21	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	70	18	ug/kg	
132-64-9	Dibenzofuran	ND	70	26	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	70	18	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	70	32	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	70	29	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	70	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	180	18	ug/kg	
84-66-2	Diethyl phthalate	ND	70	19	ug/kg	
131-11-3	Dimethyl phthalate	ND	70	21	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	70	18	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	70	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	70	32	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	123	70	18	ug/kg	
206-44-0	Fluoranthene	197	70	18	ug/kg	
86-73-7	Fluorene	ND	70	23	ug/kg	
118-74-1	Hexachlorobenzene	ND	70	26	ug/kg	
87-68-3	Hexachlorobutadiene	ND	70	30	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	70	24	ug/kg	
67-72-1	Hexachloroethane	ND	70	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	123	140	35	ug/kg	J
78-59-1	Isophorone	ND	70	27	ug/kg	
91-57-6	2-Methylnaphthalene	ND	70	27	ug/kg	
91-20-3	Naphthalene	ND	70	29	ug/kg	
88-74-4	2-Nitroaniline	ND	140	21	ug/kg	
99-09-2	3-Nitroaniline	ND	180	110	ug/kg	
100-01-6	4-Nitroaniline	ND	70	18	ug/kg	
98-95-3	Nitrobenzene	ND	70	32	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	70	26	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	70	25	ug/kg	
85-01-8	Phenanthrene	156	70	21	ug/kg	
129-00-0	Pyrene	145	70	18	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	70	26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	55%		30-130%
367-12-4	2-Fluorophenol	49%		16-130%
4165-60-0	Nitrobenzene-d5	57%		19-130%
4165-62-2	Phenol-d5	43%		18-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.11
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Report of Analysis

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Client Sample ID:	BO-SO-11-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-11	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	94.7
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	73%		40-130%
118-79-6	2,4,6-Tribromophenol	56%		17-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: BO-SO-12-00-02
Lab Sample ID: D75022-12
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 97.6

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	3C123207.D	1	09/15/15	ANJ	n/a	n/a	N:V3C5628

Initial Weight	
Run #1	4.9 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	4.9	10	2.3	ug/kg	J
71-43-2	Benzene	ND	0.52	0.14	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.16	ug/kg	
75-25-2	Bromoform	ND	5.2	0.25	ug/kg	
74-83-9	Bromomethane	ND	5.2	0.38	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	2.0	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.24	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.24	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.16	ug/kg	
75-00-3	Chloroethane	ND	5.2	0.50	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	26	1.2	ug/kg	
67-66-3	Chloroform	ND	2.1	0.16	ug/kg	
74-87-3	Chloromethane	ND	5.2	0.27	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.21	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.13	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.16	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.24	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.15	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.62	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.81	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.62	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.25	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.12	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.19	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.17	ug/kg	
591-78-6	2-Hexanone	ND	5.2	1.4	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.2	0.48	ug/kg	
75-09-2	Methylene chloride	ND	5.2	1.0	ug/kg	
100-42-5	Styrene	ND	2.1	0.19	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.18	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.31	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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4.12
4

Client Sample ID: BO-SO-12-00-02
Lab Sample ID: D75022-12
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 97.6

CAS No.	Compound	Result	RL	MDL	Units	Q
108-88-3	Toluene	ND	1.0	0.22	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.16	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.15	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.15	ug/kg	
108-05-4	Vinyl Acetate	ND	10	1.9	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.21	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.29	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		70-122%
17060-07-0	1,2-Dichloroethane-D4	112%		68-124%
2037-26-5	Toluene-D8	99%		77-125%
460-00-4	4-Bromofluorobenzene	93%		72-130%

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-12-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-12	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	97.6
Method:	SW846 8270C SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G125945.D	1	09/21/15	DC	09/14/15	OP12354	E1G1652
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	680	510	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	68	19	ug/kg	
95-57-8	2-Chlorophenol	ND	68	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	68	25	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	68	20	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	340	170	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	680	510	ug/kg	
95-48-7	2-Methylphenol	ND	68	26	ug/kg	
106-44-5	4-Methylphenol	ND	68	27	ug/kg	
88-75-5	2-Nitrophenol	ND	170	68	ug/kg	
100-02-7	4-Nitrophenol	ND	340	240	ug/kg	
87-86-5	Pentachlorophenol	ND	340	170	ug/kg	
108-95-2	Phenol	ND	68	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	68	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	68	23	ug/kg	
83-32-9	Acenaphthene	ND	68	26	ug/kg	
208-96-8	Acenaphthylene	ND	68	26	ug/kg	
120-12-7	Anthracene	141	68	20	ug/kg	
56-55-3	Benzo(a)anthracene	41.6	68	17	ug/kg	J
205-99-2	Benzo(b)fluoranthene	160	68	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	126	68	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	123	68	17	ug/kg	
50-32-8	Benzo(a)pyrene	ND	68	17	ug/kg	
100-51-6	Benzyl Alcohol	ND	68	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	68	24	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	68	30	ug/kg	
106-47-8	4-Chloroaniline	ND	68	34	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	68	26	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	68	32	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	68	29	ug/kg	
91-58-7	2-Chloronaphthalene	ND	68	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	68	25	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BO-SO-12-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-12	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	97.6
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	78.2	68	20	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	68	17	ug/kg	
132-64-9	Dibenzofuran	ND	68	25	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	68	17	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	68	31	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	68	28	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	68	26	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	17	ug/kg	
84-66-2	Diethyl phthalate	ND	68	19	ug/kg	
131-11-3	Dimethyl phthalate	ND	68	20	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	68	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	68	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	68	31	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	70.5	68	17	ug/kg	
206-44-0	Fluoranthene	199	68	17	ug/kg	
86-73-7	Fluorene	ND	68	22	ug/kg	
118-74-1	Hexachlorobenzene	ND	68	25	ug/kg	
87-68-3	Hexachlorobutadiene	ND	68	29	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	68	23	ug/kg	
67-72-1	Hexachloroethane	ND	68	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	135	140	34	ug/kg	J
78-59-1	Isophorone	ND	68	27	ug/kg	
91-57-6	2-Methylnaphthalene	ND	68	27	ug/kg	
91-20-3	Naphthalene	ND	68	28	ug/kg	
88-74-4	2-Nitroaniline	ND	140	20	ug/kg	
99-09-2	3-Nitroaniline	ND	170	100	ug/kg	
100-01-6	4-Nitroaniline	ND	68	17	ug/kg	
98-95-3	Nitrobenzene	ND	68	31	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	68	25	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	68	24	ug/kg	
85-01-8	Phenanthrene	150	68	20	ug/kg	
129-00-0	Pyrene	158	68	17	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	68	25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	55%		30-130%
367-12-4	2-Fluorophenol	46%		16-130%
4165-60-0	Nitrobenzene-d5	54%		19-130%
4165-62-2	Phenol-d5	39%		18-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-12-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-12	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	97.6
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	77%		40-130%
118-79-6	2,4,6-Tribromophenol	60%		17-130%

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ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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4.13

4

Client Sample ID: BO-SO-13-00-02**Lab Sample ID:** D75022-13**Matrix:** SO - Soil**Method:** SW846 8260C**Project:** DUG**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 88.8

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	3C123208.D	1	09/15/15	ANJ	n/a	n/a	N:V3C5628

Initial Weight

Run #1 4.9 g

Run #2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	11	2.6	ug/kg	
71-43-2	Benzene	ND	0.57	0.15	ug/kg	
75-27-4	Bromodichloromethane	ND	2.3	0.18	ug/kg	
75-25-2	Bromoform	ND	5.7	0.27	ug/kg	
74-83-9	Bromomethane	ND	5.7	0.42	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	2.2	ug/kg	
75-15-0	Carbon disulfide	ND	2.3	0.26	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.3	0.26	ug/kg	
108-90-7	Chlorobenzene	ND	2.3	0.18	ug/kg	
75-00-3	Chloroethane	ND	5.7	0.55	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	29	1.3	ug/kg	
67-66-3	Chloroform	ND	2.3	0.17	ug/kg	
74-87-3	Chloromethane	ND	5.7	0.30	ug/kg	
124-48-1	Dibromochloromethane	ND	2.3	0.24	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.14	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.18	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.26	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.16	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.15	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.68	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.90	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.68	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.3	0.27	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.3	0.14	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.3	0.20	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.19	ug/kg	
591-78-6	2-Hexanone	ND	5.7	1.5	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.7	0.53	ug/kg	
75-09-2	Methylene chloride	ND	5.7	1.1	ug/kg	
100-42-5	Styrene	0.27	2.3	0.20	ug/kg	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.3	0.20	ug/kg	
127-18-4	Tetrachloroethene	ND	2.3	0.35	ug/kg	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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4.13
4

Client Sample ID: BO-SO-13-00-02
Lab Sample ID: D75022-13
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 88.8

CAS No.	Compound	Result	RL	MDL	Units	Q
108-88-3	Toluene	ND	1.1	0.24	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.3	0.17	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.3	0.17	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.17	ug/kg	
108-05-4	Vinyl Acetate	ND	11	2.0	ug/kg	
75-01-4	Vinyl chloride	ND	2.3	0.23	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.31	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		70-122%
17060-07-0	1,2-Dichloroethane-D4	115%		68-124%
2037-26-5	Toluene-D8	100%		77-125%
460-00-4	4-Bromofluorobenzene	96%		72-130%

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-13-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-13	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	88.8
Method:	SW846 8270C SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G126003.D	1	09/23/15	DC	09/14/15	OP12354	E1G1654
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	750	560	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	75	21	ug/kg	
95-57-8	2-Chlorophenol	ND	75	27	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	75	27	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	75	23	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	190	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	750	560	ug/kg	
95-48-7	2-Methylphenol	ND	75	29	ug/kg	
106-44-5	4-Methylphenol	ND	75	30	ug/kg	
88-75-5	2-Nitrophenol	ND	190	75	ug/kg	
100-02-7	4-Nitrophenol	ND	380	260	ug/kg	
87-86-5	Pentachlorophenol	ND	380	190	ug/kg	
108-95-2	Phenol	ND	75	30	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	75	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	75	26	ug/kg	
83-32-9	Acenaphthene	ND	75	29	ug/kg	
208-96-8	Acenaphthylene	ND	75	29	ug/kg	
120-12-7	Anthracene	67.4	75	22	ug/kg	J
56-55-3	Benzo(a)anthracene	65.7	75	19	ug/kg	J
205-99-2	Benzo(b)fluoranthene	201	75	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	56.5	75	19	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	127	75	19	ug/kg	
50-32-8	Benzo(a)pyrene	ND	75	19	ug/kg	
100-51-6	Benzyl Alcohol	ND	75	27	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	75	27	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	75	33	ug/kg	
106-47-8	4-Chloroaniline	ND	75	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	75	29	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	75	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	75	32	ug/kg	
91-58-7	2-Chloronaphthalene	ND	75	24	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	75	28	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

4.13

4

Client Sample ID:	BO-SO-13-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-13	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	88.8
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	137	75	23	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	64.2	75	19	ug/kg	J
132-64-9	Dibenzofuran	ND	75	28	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	75	19	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	75	34	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	75	31	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	75	29	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	190	19	ug/kg	
84-66-2	Diethyl phthalate	ND	75	21	ug/kg	
131-11-3	Dimethyl phthalate	ND	75	22	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	75	19	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	75	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	75	35	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	191	75	19	ug/kg	
206-44-0	Fluoranthene	219	75	19	ug/kg	
86-73-7	Fluorene	ND	75	25	ug/kg	
118-74-1	Hexachlorobenzene	ND	75	27	ug/kg	
87-68-3	Hexachlorobutadiene	ND	75	32	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	75	26	ug/kg	
67-72-1	Hexachloroethane	ND	75	32	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	152	150	38	ug/kg	
78-59-1	Isophorone	ND	75	29	ug/kg	
91-57-6	2-Methylnaphthalene	ND	75	29	ug/kg	
91-20-3	Naphthalene	ND	75	31	ug/kg	
88-74-4	2-Nitroaniline	ND	150	23	ug/kg	
99-09-2	3-Nitroaniline	ND	190	110	ug/kg	
100-01-6	4-Nitroaniline	ND	75	19	ug/kg	
98-95-3	Nitrobenzene	ND	75	35	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	75	28	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	75	26	ug/kg	
85-01-8	Phenanthrene	108	75	22	ug/kg	
129-00-0	Pyrene	216	75	19	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	75	28	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	92%		30-130%
367-12-4	2-Fluorophenol	70%		16-130%
4165-60-0	Nitrobenzene-d5	92%		19-130%
4165-62-2	Phenol-d5	76%		18-130%

ND = Not detected MDL = Method Detection Limit

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RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 3 of 3

Client Sample ID:	BO-SO-13-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-13	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	88.8
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	94%		40-130%
118-79-6	2,4,6-Tribromophenol	91%		17-130%

4.13

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ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 2

Client Sample ID: BO-SO-14-00-02
Lab Sample ID: D75022-14
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 95.3

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	3C123209.D	1	09/15/15	ANJ	n/a	n/a	N:V3C5628
Run #2							

Initial Weight	
Run #1	5.0 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	3.8	10	2.4	ug/kg	J
71-43-2	Benzene	ND	0.52	0.14	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.16	ug/kg	
75-25-2	Bromoform	ND	5.2	0.25	ug/kg	
74-83-9	Bromomethane	ND	5.2	0.38	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	2.0	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.24	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.24	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.16	ug/kg	
75-00-3	Chloroethane	ND	5.2	0.50	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	26	1.2	ug/kg	
67-66-3	Chloroform	ND	2.1	0.16	ug/kg	
74-87-3	Chloromethane	ND	5.2	0.27	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.22	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.13	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.16	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.24	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.15	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.62	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.82	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.62	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.25	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.12	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.19	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.17	ug/kg	
591-78-6	2-Hexanone	ND	5.2	1.4	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.2	0.48	ug/kg	
75-09-2	Methylene chloride	ND	5.2	1.0	ug/kg	
100-42-5	Styrene	ND	2.1	0.19	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.18	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.32	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.14

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Report of Analysis

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Client Sample ID: BO-SO-14-00-02
Lab Sample ID: D75022-14
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 95.3

CAS No.	Compound	Result	RL	MDL	Units	Q
108-88-3	Toluene	ND	1.0	0.22	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.16	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.15	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.15	ug/kg	
108-05-4	Vinyl Acetate	ND	10	1.9	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.21	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.29	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		70-122%
17060-07-0	1,2-Dichloroethane-D4	113%		68-124%
2037-26-5	Toluene-D8	98%		77-125%
460-00-4	4-Bromofluorobenzene	96%		72-130%

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 3

Client Sample ID:	BO-SO-14-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-14	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	95.3
Method:	SW846 8270C SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G126004.D	1	09/23/15	DC	09/14/15	OP12354	E1G1654
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	700	520	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	70	20	ug/kg	
95-57-8	2-Chlorophenol	ND	70	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	70	25	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	70	21	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	350	170	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	700	520	ug/kg	
95-48-7	2-Methylphenol	ND	70	26	ug/kg	
106-44-5	4-Methylphenol	ND	70	28	ug/kg	
88-75-5	2-Nitrophenol	ND	170	70	ug/kg	
100-02-7	4-Nitrophenol	ND	350	240	ug/kg	
87-86-5	Pentachlorophenol	ND	350	170	ug/kg	
108-95-2	Phenol	ND	70	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	70	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	70	24	ug/kg	
83-32-9	Acenaphthene	ND	70	26	ug/kg	
208-96-8	Acenaphthylene	35.7	70	26	ug/kg	J
120-12-7	Anthracene	69.0	70	20	ug/kg	J
56-55-3	Benzo(a)anthracene	83.9	70	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	164	70	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	45.3	70	17	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	105	70	17	ug/kg	
50-32-8	Benzo(a)pyrene	ND	70	17	ug/kg	
100-51-6	Benzyl Alcohol	ND	70	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	70	25	ug/kg	
85-68-7	Butyl benzyl phthalate	67.2	70	31	ug/kg	J
106-47-8	4-Chloroaniline	ND	70	35	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	70	27	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	70	33	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	70	29	ug/kg	
91-58-7	2-Chloronaphthalene	ND	70	23	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	70	26	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.14
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Report of Analysis

Client Sample ID:	BO-SO-14-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-14	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	95.3
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	138	70	21	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	70	17	ug/kg	
132-64-9	Dibenzofuran	ND	70	26	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	70	17	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	70	31	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	70	29	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	70	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	17	ug/kg	
84-66-2	Diethyl phthalate	ND	70	19	ug/kg	
131-11-3	Dimethyl phthalate	ND	70	21	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	70	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	70	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	70	32	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	615	70	17	ug/kg	
206-44-0	Fluoranthene	230	70	17	ug/kg	
86-73-7	Fluorene	45.2	70	23	ug/kg	J
118-74-1	Hexachlorobenzene	ND	70	25	ug/kg	
87-68-3	Hexachlorobutadiene	ND	70	30	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	70	24	ug/kg	
67-72-1	Hexachloroethane	ND	70	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	131	140	35	ug/kg	J
78-59-1	Isophorone	ND	70	27	ug/kg	
91-57-6	2-Methylnaphthalene	ND	70	27	ug/kg	
91-20-3	Naphthalene	ND	70	29	ug/kg	
88-74-4	2-Nitroaniline	ND	140	21	ug/kg	
99-09-2	3-Nitroaniline	ND	170	100	ug/kg	
100-01-6	4-Nitroaniline	ND	70	17	ug/kg	
98-95-3	Nitrobenzene	ND	70	32	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	70	26	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	70	24	ug/kg	
85-01-8	Phenanthrene	128	70	21	ug/kg	
129-00-0	Pyrene	165	70	17	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	70	26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	46%		30-130%
367-12-4	2-Fluorophenol	29%		16-130%
4165-60-0	Nitrobenzene-d5	44%		19-130%
4165-62-2	Phenol-d5	34%		18-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.14
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Report of Analysis

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Client Sample ID:	BO-SO-14-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-14	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	95.3
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	53%		40-130%
118-79-6	2,4,6-Tribromophenol	48%		17-130%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 2

Client Sample ID: BO-SO-15-00-02
Lab Sample ID: D75022-15
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 96.5

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	3C123210.D	1	09/15/15	ANJ	n/a	n/a	N:V3C5628

Initial Weight	
Run #1	4.7 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	11	2.5	ug/kg	
71-43-2	Benzene	ND	0.55	0.15	ug/kg	
75-27-4	Bromodichloromethane	ND	2.2	0.17	ug/kg	
75-25-2	Bromoform	ND	5.5	0.26	ug/kg	
74-83-9	Bromomethane	ND	5.5	0.40	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	2.1	ug/kg	
75-15-0	Carbon disulfide	ND	2.2	0.25	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.2	0.25	ug/kg	
108-90-7	Chlorobenzene	ND	2.2	0.17	ug/kg	
75-00-3	Chloroethane	ND	5.5	0.53	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	28	1.2	ug/kg	
67-66-3	Chloroform	ND	2.2	0.16	ug/kg	
74-87-3	Chloromethane	ND	5.5	0.29	ug/kg	
124-48-1	Dibromochloromethane	ND	2.2	0.23	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.13	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.17	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.25	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.16	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.15	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.65	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.86	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.65	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.2	0.26	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.2	0.13	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	0.20	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.18	ug/kg	
591-78-6	2-Hexanone	ND	5.5	1.5	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.5	0.51	ug/kg	
75-09-2	Methylene chloride	ND	5.5	1.1	ug/kg	
100-42-5	Styrene	ND	2.2	0.20	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	0.19	ug/kg	
127-18-4	Tetrachloroethene	ND	2.2	0.33	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.15

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Report of Analysis

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4.15
4

Client Sample ID: BO-SO-15-00-02
Lab Sample ID: D75022-15
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 96.5

CAS No.	Compound	Result	RL	MDL	Units	Q
108-88-3	Toluene	ND	1.1	0.23	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.2	0.16	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.2	0.16	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.16	ug/kg	
108-05-4	Vinyl Acetate	ND	11	2.0	ug/kg	
75-01-4	Vinyl chloride	ND	2.2	0.22	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.30	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		70-122%
17060-07-0	1,2-Dichloroethane-D4	113%		68-124%
2037-26-5	Toluene-D8	99%		77-125%
460-00-4	4-Bromofluorobenzene	93%		72-130%

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 3

Client Sample ID:	BO-SO-15-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-15	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	96.5
Method:	SW846 8270C SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G126005.D	1	09/23/15	DC	09/14/15	OP12354	E1G1654
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	690	520	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	69	20	ug/kg	
95-57-8	2-Chlorophenol	ND	69	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	69	25	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	69	21	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	350	170	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	690	520	ug/kg	
95-48-7	2-Methylphenol	ND	69	26	ug/kg	
106-44-5	4-Methylphenol	ND	69	27	ug/kg	
88-75-5	2-Nitrophenol	ND	170	69	ug/kg	
100-02-7	4-Nitrophenol	ND	350	240	ug/kg	
87-86-5	Pentachlorophenol	ND	350	170	ug/kg	
108-95-2	Phenol	ND	69	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	69	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	69	24	ug/kg	
83-32-9	Acenaphthene	ND	69	26	ug/kg	
208-96-8	Acenaphthylene	35.4	69	26	ug/kg	J
120-12-7	Anthracene	67.9	69	20	ug/kg	J
56-55-3	Benzo(a)anthracene	91.1	69	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	182	69	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	60.1	69	17	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	119	69	17	ug/kg	
50-32-8	Benzo(a)pyrene	ND	69	17	ug/kg	
100-51-6	Benzyl Alcohol	ND	69	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	69	25	ug/kg	
85-68-7	Butyl benzyl phthalate	128	69	31	ug/kg	
106-47-8	4-Chloroaniline	ND	69	35	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	69	27	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	69	33	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	69	29	ug/kg	
91-58-7	2-Chloronaphthalene	ND	69	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	69	26	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.15
4

Report of Analysis

Client Sample ID:	BO-SO-15-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-15	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	96.5
Method:	SW846 8270C SW846 3546		
Project:	DUG		

4.15

4

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	149	69	21	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	69	17	ug/kg	
132-64-9	Dibenzofuran	ND	69	26	ug/kg	
84-74-2	Di-n-butyl phthalate	52.4	69	17	ug/kg	J
95-50-1	1,2-Dichlorobenzene	ND	69	31	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	69	28	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	69	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	17	ug/kg	
84-66-2	Diethyl phthalate	ND	69	19	ug/kg	
131-11-3	Dimethyl phthalate	ND	69	20	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	69	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	69	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	69	32	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	444	69	17	ug/kg	
206-44-0	Fluoranthene	244	69	17	ug/kg	
86-73-7	Fluorene	ND	69	23	ug/kg	
118-74-1	Hexachlorobenzene	ND	69	25	ug/kg	
87-68-3	Hexachlorobutadiene	ND	69	30	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	69	24	ug/kg	
67-72-1	Hexachloroethane	ND	69	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	154	140	35	ug/kg	
78-59-1	Isophorone	ND	69	27	ug/kg	
91-57-6	2-Methylnaphthalene	ND	69	27	ug/kg	
91-20-3	Naphthalene	41.9	69	28	ug/kg	J
88-74-4	2-Nitroaniline	ND	140	21	ug/kg	
99-09-2	3-Nitroaniline	ND	170	100	ug/kg	
100-01-6	4-Nitroaniline	ND	69	17	ug/kg	
98-95-3	Nitrobenzene	ND	69	32	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	69	26	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	69	24	ug/kg	
85-01-8	Phenanthrene	126	69	20	ug/kg	
129-00-0	Pyrene	178	69	17	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	69	26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	54%		30-130%
367-12-4	2-Fluorophenol	39%		16-130%
4165-60-0	Nitrobenzene-d5	53%		19-130%
4165-62-2	Phenol-d5	38%		18-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 3 of 3

Client Sample ID:	BO-SO-15-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-15	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	96.5
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	62%		40-130%
118-79-6	2,4,6-Tribromophenol	57%		17-130%

4.15

4

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound



Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

PAGE 1 OF 2

Accutest Laboratories Mountain States
4036 Youngfield Street, Wheat Ridge, CO 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	RR-8/31/2015-4 D75022

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)										Matrix Codes						
Company Name <i>Weston Solutions</i>	Project Name <i>DUGS</i>	Street:																		
Street Address <i>1435 Garrison St</i>	City: <i>Denver</i>	Billing Information (If different from Report to)																		
City <i>Lakewood</i>	State <i>CO</i>	Zip <i>80215</i>	City: <i>Denver</i>	Company Name																
Project Contact <i>Roy Weindorf</i>	E-mail <i>roy.weindorf@westonsolutions.com</i>	Project# <i></i>	Street Address <i></i>																	
Phone# <i>303-729-6100</i>	Fax# <i>6101</i>	Client PO# <i></i>	City <i></i>	State <i></i>	Zip <i></i>															
Sampler(s) Name(s) <i>Roy Weindorf</i>	Phone # <i></i>	Project Manager <i>Mark Blanchard</i>	Attention: <i></i>	PO#																
Accutest Sample #	Field ID / Point of Collection	MEOH/DI Viol #	Collection			Matrix	# of bottles	Number of preserved Bottles						Baseline	TAL Metals	PPL Pesticides	pH	VOCs	SVOCs	LAB USE ONLY
			Date <i>9/10/15</i>	Time <i>0930</i>	Sampled by <i>RW</i>			HCl	NaOH	HNO3	H2SO4	NONE	DI Water							
BO-SO-01-00-02												X X X X X X							01	
BO-SO-02-02-06			1041		1							X X X X X X								02
BO-SO-03-06-18			1157		1							X X X X X X								03
BO-SO-04-00-02			0950		1							X X X X X X								04
BO-SO-05-02-06			1105		1							X X X X X X								05
BO-SO-06-06-18			1214		1							X X X X X X								06
BO-SO-07-00-02			1007		1							X X X X X X								07
BO-SO-08-02-06			1122		1							X X X X X X								08
BO-SO-09-06-18			1227		1							X X X X X X								09
BO-SO-10-02-06			1041		1							X X X X X X								10
BO-SO-11-00-02			1235		6							X X X X X X								11
BO-SO-12-00-02			1237		2							X X X X X X								12

Turnaround Time (Business days)	Approved By (Accutest PM): / Date:	Comments / Special Instructions
<input checked="" type="checkbox"/> Std. 10 Business Days		
<input type="checkbox"/> Std. 5 Business Days (By Contract only)		
<input type="checkbox"/> 5 Day ✓ SH		
<input type="checkbox"/> 3 Day EMERGENC		
<input type="checkbox"/> 2 Day EMERGENC		
<input type="checkbox"/> 1 Day EMERGENC		
Emergency & Rush T/A data available via LabLink		
<input type="checkbox"/> Commercial "A" (Level 1) <input checked="" type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> Commercial "B" + Narrative <input type="checkbox"/> FULLTI (Level 3+)		<input type="checkbox"/> State Forms <input checked="" type="checkbox"/> EDD Format <input type="checkbox"/> PDF
		<i>Scribe</i> <i>Corporable</i>
		MS/MSDs: BO-SO-01-00-02 + BO-SO-11-00-02
		Commercial "A" = Results Only Commercial "B" = Results + QC Summary

Sample Custody must be documented below each time samples change possession, including courier delivery.									
Relinquished by Sampler:	Date/Time:	Received By:	Relinquished By:	Date/Time:	Received By:				
1	11/10 1600	1 9/10/15 16:00	2		2				
Relinquished by Sampler:	Date/Time:	Received By:	Relinquished By:	Date/Time:	Received By:				
3		3	4		4				
Relinquished by:	Date/Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice	Cooler Temp.			
5		5	f10	<input type="checkbox"/> Intact <input type="checkbox"/> Not intact		5.7 1106			

5.1
5

D75022: Chain of Custody
Page 1 of 3



CHAIN OF CUSTODY

PAGE 2 OF 2

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

Bottle Order Control # RR-8/31/2015-4
Accutest Job # D75022

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)		Motrix Codes														
Company Name <i>Same as Page 1</i>	Project Name					DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid SOL - Other Solid AIR - Air WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank														
Street Address	Street:	Billing Information (if different from Report to)																		
City State Zip	City:	Company Name																		
Project Contact	E-mail	Project#	Street Address																	
Phone #	Fax #	Client PO#	City	State	Zip															
Sampler(s) Name(s)	Phone #	Project Manager	Attention:	PO#																
		Collection		Number of preserved Bottles																
Accusit Sample #	Field ID / Point of Collection	MEDH/DI Vid #	Date	Time	Sampled by	Metric	# of bottles	REC	NOCH	HNO3	KCLO4	NAME	DI Water	NE/N	EM/ORE	Boil/Burn	Vials	Solv	LAB USE ONLY	
<i>BO-SO-13-00-02</i>			<i>9/10/15</i>	<i>1236</i>	<i>RW SO</i>		<i>2</i>										<i>X</i>	<i>X</i>	<i>X</i>	<i>13</i>
<i>BO-SO-14-00-02</i>				<i>↓</i>	<i>1238</i>												<i>X</i>	<i>X</i>	<i>X</i>	<i>14</i>
<i>BO-SO-15-00-02</i>				<i>↓</i>	<i>1236</i>												<i>X</i>	<i>X</i>	<i>X</i>	<i>15</i>
																				<i>B3</i>
Data Deliverable Information										Comments / Special Instructions										
<input checked="" type="checkbox"/> Std. 10 Business Days		Approved By (Accusit PM): Date:		<input type="checkbox"/> Commercial "A" (Level 1)		<input type="checkbox"/> State Forms		<input checked="" type="checkbox"/> Commercial "B" (Level 2)		<input checked="" type="checkbox"/> EDD Format		<i>Scribe</i>								
<input type="checkbox"/> Std. 5 Business Days (By Contract only)				<input type="checkbox"/> Commercial "B" >Narrative		<input type="checkbox"/> PDF		<input type="checkbox"/> FULL1 (Level 3-4)												
Emergency & Rush/T/A data available VIA LobiLink										Commercial "A" = Results Only Commercial "B" = Results + QC Summary										
Sample Custody must be documented below each time samples change possession, including courier delivery.																				
Relinquished by Sampler: <i>1</i>	Date Time: <i>9/10/15</i>	Received By: <i>John Doe</i>	Relinquished By: <i>2</i>	Date Time: <i>9/10/15 16:00</i>	Received By: <i>2</i>	Relinquished By: <i>3</i>	Date Time: <i>9/10/15</i>	Received By: <i>3</i>	Relinquished By: <i>4</i>	Date Time: <i>9/10/15</i>	Received By: <i>4</i>	Relinquished by: <i>5</i>	Date Time: <i>9/10/15</i>	Received By: <i>5</i>	Custody Seal #: <i>C-10</i>	<input type="checkbox"/> In tact	Preserved where applicable	On Ice <input type="checkbox"/>	Cooler Temp. <i>5.7</i>	

D75022: Chain of Custody
Page 2 of 3



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D75022

Client: WESTON SOLUTIONS

Project: DUG

Date / Time Received: 9/10/2015 4:00:00 PM

Delivery Method:

Airbill #'s: hd

Cooler Temps (Initial/Adjusted): #1: (5.7/5.7);

Cooler Security

	<u>Y</u> or <u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/> <input type="checkbox"/>

	<u>Y</u> or <u>N</u>
3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

Cooler Temperature

	<u>Y</u> or <u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Cooler temp verification:	Bar Therm;
3. Cooler media:	Ice (Bag)
4. No. Coolers:	1

Quality Control Preservation

	<u>Y</u> or <u>N</u>	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/> <input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	

Sample Integrity - Documentation

	<u>Y</u> or <u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/> <input type="checkbox"/>

3. Sample container label / COC agree:	<input checked="" type="checkbox"/> <input type="checkbox"/>
--	--

Sample Integrity - Condition

	<u>Y</u> or <u>N</u>
1. Sample recv'd within HT:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/> <input type="checkbox"/>
3. Condition of sample:	Intact

Sample Integrity - Instructions

	<u>Y</u> or <u>N</u>	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/> <input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/> <input checked="" type="checkbox"/>	
3. Sufficient volume recv'd for analysis:	<input checked="" type="checkbox"/> <input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
5. Filtering instructions clear:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	

Comments

Accutest Laboratories
V:(303) 425-60214036 Youngfield Street
F: (303) 425-6854Wheat Ridge, CO
www.accutest.com**D75022: Chain of Custody****Page 3 of 3**



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Page 1 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MB	1G125882.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	670	500	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	67	19	ug/kg	
95-57-8	2-Chlorophenol	ND	67	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	67	24	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	67	20	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	330	170	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	670	500	ug/kg	
95-48-7	2-Methylphenol	ND	67	25	ug/kg	
106-44-5	4-Methylphenol	ND	67	26	ug/kg	
88-75-5	2-Nitrophenol	ND	170	67	ug/kg	
100-02-7	4-Nitrophenol	ND	330	230	ug/kg	
87-86-5	Pentachlorophenol	ND	330	170	ug/kg	
108-95-2	Phenol	ND	67	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	67	26	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	67	23	ug/kg	
83-32-9	Acenaphthene	ND	67	25	ug/kg	
208-96-8	Acenaphthylene	ND	67	25	ug/kg	
120-12-7	Anthracene	ND	67	19	ug/kg	
56-55-3	Benzo(a)anthracene	ND	67	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	67	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	67	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	67	17	ug/kg	
50-32-8	Benzo(a)pyrene	ND	67	17	ug/kg	
100-51-6	Benzyl Alcohol	ND	67	24	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	67	24	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	67	30	ug/kg	
106-47-8	4-Chloroaniline	ND	67	33	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	67	26	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	67	32	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	67	28	ug/kg	
91-58-7	2-Chloronaphthalene	ND	67	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	67	25	ug/kg	
218-01-9	Chrysene	ND	67	20	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	67	17	ug/kg	
132-64-9	Dibenzofuran	ND	67	25	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	17	ug/kg	

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Q

Method Blank Summary

Page 2 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MB	1G125882.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	67	30	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	67	27	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	67	26	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	17	ug/kg	
84-66-2	Diethyl phthalate	ND	67	18	ug/kg	
131-11-3	Dimethyl phthalate	ND	67	20	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	67	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	67	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	67	31	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	17	ug/kg	
206-44-0	Fluoranthene	ND	67	17	ug/kg	
86-73-7	Fluorene	ND	67	22	ug/kg	
118-74-1	Hexachlorobenzene	ND	67	24	ug/kg	
87-68-3	Hexachlorobutadiene	ND	67	29	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	67	23	ug/kg	
67-72-1	Hexachloroethane	ND	67	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	130	33	ug/kg	
78-59-1	Isophorone	ND	67	26	ug/kg	
91-57-6	2-Methylnaphthalene	ND	67	26	ug/kg	
91-20-3	Naphthalene	ND	67	27	ug/kg	
88-74-4	2-Nitroaniline	ND	130	20	ug/kg	
99-09-2	3-Nitroaniline	ND	170	100	ug/kg	
100-01-6	4-Nitroaniline	ND	67	17	ug/kg	
98-95-3	Nitrobenzene	ND	67	31	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	67	25	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	67	23	ug/kg	
85-01-8	Phenanthrene	ND	67	20	ug/kg	
129-00-0	Pyrene	ND	67	17	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	67	25	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
321-60-8	2-Fluorobiphenyl	59%	30-130%
367-12-4	2-Fluorophenol	65%	16-130%
4165-60-0	Nitrobenzene-d5	61%	19-130%

Method Blank Summary

Page 3 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MB	1G125882.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No. Surrogate Recoveries Limits

4165-62-2	Phenol-d5	55%	18-130%
1718-51-0	Terphenyl-d14	108%	40-130%
118-79-6	2,4,6-Tribromophenol	62%	17-130%

Blank Spike Summary

Page 1 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-BS	1G125883.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
65-85-0	Benzoic Acid	1670	1320	79	32-130
59-50-7	4-Chloro-3-methyl phenol	1670	1370	82	52-130
95-57-8	2-Chlorophenol	1670	1200	72	47-130
120-83-2	2,4-Dichlorophenol	1670	1280	77	52-130
105-67-9	2,4-Dimethylphenol	1670	1320	79	43-130
534-52-1	4,6-Dinitro-o-cresol	1670	1580	95	37-130
51-28-5	2,4-Dinitrophenol	1670	1280	77	32-130
95-48-7	2-Methylphenol	1670	1280	77	43-130
106-44-5	4-Methylphenol	1670	1230	74	41-130
88-75-5	2-Nitrophenol	1670	1340	80	50-130
100-02-7	4-Nitrophenol	1670	1600	96	41-130
87-86-5	Pentachlorophenol	1670	1560	94	46-130
108-95-2	Phenol	1670	1250	75	46-130
95-95-4	2,4,5-Trichlorophenol	1670	1430	86	52-130
88-06-2	2,4,6-Trichlorophenol	1670	1480	89	53-130
83-32-9	Acenaphthene	1670	1400	84	58-130
208-96-8	Acenaphthylene	1670	1250	75	58-130
120-12-7	Anthracene	1670	1340	80	67-130
56-55-3	Benzo(a)anthracene	1670	1720	103	63-130
205-99-2	Benzo(b)fluoranthene	1670	1570	94	42-157
207-08-9	Benzo(k)fluoranthene	1670	1500	90	38-175
191-24-2	Benzo(g,h,i)perylene	1670	1580	95	49-152
50-32-8	Benzo(a)pyrene	1670	1570	94	47-155
100-51-6	Benzyl Alcohol	1670	1270	76	45-130
101-55-3	4-Bromophenyl phenyl ether	1670	1330	80	65-130
85-68-7	Butyl benzyl phthalate	1670	1680	101	61-130
106-47-8	4-Chloroaniline	1670	1070	64	37-130
111-91-1	bis(2-Chloroethoxy)methane	1670	1250	75	49-130
111-44-4	bis(2-Chloroethyl)ether	1670	1260	76	45-130
108-60-1	bis(2-Chloroisopropyl)ether	1670	1320	79	45-130
91-58-7	2-Chloronaphthalene	1670	1200	72	55-130
7005-72-3	4-Chlorophenyl phenyl ether	1670	1290	77	58-130
218-01-9	Chrysene	1670	1710	103	68-130
53-70-3	Dibenzo(a,h)anthracene	1670	1570	94	48-152
132-64-9	Dibenzofuran	1670	1260	76	60-130
84-74-2	Di-n-butyl phthalate	1670	1470	88	65-130

* = Outside of Control Limits.

6.2.1

Blank Spike Summary

Page 2 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-BS	1G125883.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
95-50-1	1,2-Dichlorobenzene	1670	1190	71	49-130
541-73-1	1,3-Dichlorobenzene	1670	1140	68	49-130
106-46-7	1,4-Dichlorobenzene	1670	1120	67	49-130
91-94-1	3,3'-Dichlorobenzidine	1670	1710	103	10-180
84-66-2	Diethyl phthalate	1670	1460	88	60-130
131-11-3	Dimethyl phthalate	1670	1490	89	59-130
121-14-2	2,4-Dinitrotoluene	1670	1650	99	64-130
606-20-2	2,6-Dinitrotoluene	1670	1630	98	63-130
117-84-0	Di-n-octyl phthalate	1670	1610	97	35-169
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1800	108	59-130
206-44-0	Fluoranthene	1670	1340	80	64-130
86-73-7	Fluorene	1670	1250	75	58-130
118-74-1	Hexachlorobenzene	1670	1350	81	66-130
87-68-3	Hexachlorobutadiene	1670	1210	73	51-130
77-47-4	Hexachlorocyclopentadiene	1670	1150	69	34-130
67-72-1	Hexachloroethane	1670	1120	67	45-130
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1560	94	45-153
78-59-1	Isophorone	1670	1400	84	50-130
91-57-6	2-Methylnaphthalene	1670	1120	67	54-130
91-20-3	Naphthalene	1670	1070	64	53-130
88-74-4	2-Nitroaniline	1670	1480	89	54-130
99-09-2	3-Nitroaniline	1670	1470	88	28-133
100-01-6	4-Nitroaniline	1670	1630	98	55-130
98-95-3	Nitrobenzene	1670	1320	79	49-130
86-30-6	N-Nitrosodiphenylamine	1670	1360	82	52-133
621-64-7	N-Nitroso-di-n-propylamine	1670	1070	64	47-130
85-01-8	Phenanthrene	1670	1320	79	66-130
129-00-0	Pyrene	1670	1440	86	68-130
120-82-1	1,2,4-Trichlorobenzene	1670	1130	68	53-130

CAS No.	Surrogate Recoveries	BSP	Limits
321-60-8	2-Fluorobiphenyl	67%	30-130%
367-12-4	2-Fluorophenol	67%	16-130%
4165-60-0	Nitrobenzene-d5	66%	19-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-BS	1G125883.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:**Method:** SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Surrogate Recoveries	BSP	Limits
4165-62-2	Phenol-d5	65%	18-130%
1718-51-0	Terphenyl-d14	84%	40-130%
118-79-6	2,4,6-Tribromophenol	78%	17-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MS	1G125886.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
OP12354-MSD	1G125887.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
D75022-11	1G125885.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	D75022-11		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
65-85-0	Benzoic Acid	ND		1760	ND	0* a	1760	ND	0* a	nc	10-130/30
59-50-7	4-Chloro-3-methyl phenol	ND		1760	1260	72	1760	1230	70	2	26-130/30
95-57-8	2-Chlorophenol	ND		1760	1190	68	1760	1240	70	4	27-130/30
120-83-2	2,4-Dichlorophenol	ND		1760	1280	73	1760	1280	73	0	28-130/30
105-67-9	2,4-Dimethylphenol	ND		1760	1140	65	1760	1170	66	3	10-130/30
534-52-1	4,6-Dinitro-o-cresol	ND		1760	782	44	1760	736	42	6	10-130/30
51-28-5	2,4-Dinitrophenol	ND		1760	550	31	1760	ND	0* a	200* b	10-130/30
95-48-7	2-Methylphenol	ND		1760	1190	68	1760	1220	69	2	22-130/30
106-44-5	4-Methylphenol	ND		1760	1220	69	1760	1260	72	3	10-131/30
88-75-5	2-Nitrophenol	ND		1760	1420	81	1760	1440	82	1	24-130/30
100-02-7	4-Nitrophenol	ND		1760	991	56	1760	1040	59	5	10-130/30
87-86-5	Pentachlorophenol	ND		1760	1140	65	1760	1150	65	1	10-130/30
108-95-2	Phenol	ND		1760	1140	65	1760	1160	66	2	21-130/30
95-95-4	2,4,5-Trichlorophenol	ND		1760	1300	74	1760	1330	76	2	25-130/30
88-06-2	2,4,6-Trichlorophenol	ND		1760	1450	82	1760	1440	82	1	22-130/30
83-32-9	Acenaphthene	ND		1760	1400	80	1760	1370	78	2	36-130/30
208-96-8	Acenaphthylene	ND		1760	1270	72	1760	1270	72	0	10-150/30
120-12-7	Anthracene	147		1760	1290	65	1760	1250	63	3	50-130/30
56-55-3	Benzo(a)anthracene	41.8	J	1760	1580	87	1760	1560	86	1	41-130/30
205-99-2	Benzo(b)fluoranthene	143		1760	1560	81	1760	1490	77	5	29-152/30
207-08-9	Benzo(k)fluoranthene	126		1760	1350	70	1760	1350	70	0	14-175/30
191-24-2	Benzo(g,h,i)perylene	111		1760	1510	79	1760	1500	79	1	15-164/30
50-32-8	Benzo(a)pyrene	ND		1760	1800	102	1760	1770	101	2	27-151/30
100-51-6	Benzyl Alcohol	ND		1760	1250	71	1760	1270	72	2	21-130/30
101-55-3	4-Bromophenyl phenyl ether	ND		1760	1200	68	1760	1210	69	1	44-130/30
85-68-7	Butyl benzyl phthalate	ND		1760	1870	106	1760	1870	106	0	46-130/30
106-47-8	4-Chloroaniline	ND		1760	478	27	1760	448	25	6	10-130/30
111-91-1	bis(2-Chloroethoxy)methane	ND		1760	1290	73	1760	1270	72	2	24-130/30
111-44-4	bis(2-Chloroethyl)ether	ND		1760	1390	79	1760	1440	82	4	32-130/30
108-60-1	bis(2-Chloroisopropyl)ether	ND		1760	1310	74	1760	1290	73	2	28-130/30
91-58-7	2-Chloronaphthalene	ND		1760	1290	73	1760	1270	72	2	11-140/30
7005-72-3	4-Chlorophenyl phenyl ether	ND		1760	1290	73	1760	1270	72	2	19-142/30
218-01-9	Chrysene	57.2	J	1760	1660	91	1760	1600	88	4	46-130/30
53-70-3	Dibenzo(a,h)anthracene	ND		1760	1610	91	1760	1600	91	1	31-152/30
132-64-9	Dibenzofuran	ND		1760	1290	73	1760	1270	72	2	10-163/30
84-74-2	Di-n-butyl phthalate	ND		1760	1530	87	1760	1510	86	1	50-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MS	1G125886.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
OP12354-MSD	1G125887.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
D75022-11	1G125885.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	D75022-11		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
95-50-1	1,2-Dichlorobenzene	ND		1760	1230	70	1760	1270	72	3	30-130/30
541-73-1	1,3-Dichlorobenzene	ND		1760	1170	66	1760	1230	70	5	30-130/30
106-46-7	1,4-Dichlorobenzene	ND		1760	1140	65	1760	1210	69	6	29-130/30
91-94-1	3,3'-Dichlorobenzidine	ND		1760	ND	0* a	1760	ND	0* a	nc	10-180/30
84-66-2	Diethyl phthalate	ND		1760	1330	76	1760	1320	75	1	20-143/30
131-11-3	Dimethyl phthalate	ND		1760	1390	79	1760	1370	78	1	16-143/30
121-14-2	2,4-Dinitrotoluene	ND		1760	1420	81	1760	1400	80	1	16-148/30
606-20-2	2,6-Dinitrotoluene	ND		1760	1540	88	1760	1470	84	5	23-139/30
117-84-0	Di-n-octyl phthalate	ND		1760	1650	94	1760	1640	93	1	10-190/30
117-81-7	bis(2-Ethylhexyl)phthalate	123		1760	1870	99	1760	1870	99	0	37-131/30
206-44-0	Fluoranthene	197		1760	1410	69	1760	1390	68	1	53-130/30
86-73-7	Fluorene	ND		1760	1220	69	1760	1160	66	5	24-134/30
118-74-1	Hexachlorobenzene	ND		1760	1160	66	1760	1170	66	1	46-130/30
87-68-3	Hexachlorobutadiene	ND		1760	1320	75	1760	1360	77	3	26-130/30
77-47-4	Hexachlorocyclopentadiene	ND		1760	779	44	1760	501	28	43* b	10-130/30
67-72-1	Hexachloroethane	ND		1760	1130	64	1760	1100	63	3	10-167/30
193-39-5	Indeno(1,2,3-cd)pyrene	123	J	1760	1600	84	1760	1650	87	3	26-153/30
78-59-1	Isophorone	ND		1760	1450	82	1760	1380	78	5	32-130/30
91-57-6	2-Methylnaphthalene	ND		1760	1190	68	1760	1180	67	1	10-148/30
91-20-3	Naphthalene	ND		1760	1150	65	1760	1180	67	3	27-130/30
88-74-4	2-Nitroaniline	ND		1760	1370	78	1760	1370	78	0	10-146/30
99-09-2	3-Nitroaniline	ND		1760	685	39	1760	672	38	2	15-131/30
100-01-6	4-Nitroaniline	ND		1760	634	36	1760	631	36	0	13-130/30
98-95-3	Nitrobenzene	ND		1760	1360	77	1760	1360	77	0	33-130/30
86-30-6	N-Nitrosodiphenylamine	ND		1760	1130	64	1760	1140	65	1	17-155/30
621-64-7	N-Nitroso-di-n-propylamine	ND		1760	1170	66	1760	1180	67	1	30-130/30
85-01-8	Phenanthrene	156		1760	1240	62	1760	1230	61	1	38-130/30
129-00-0	Pyrene	145		1760	1800	94	1760	1760	92	2	53-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		1760	1200	68	1760	1220	69	2	30-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D75022-11	Limits
321-60-8	2-Fluorobiphenyl	69%	66%	55%	30-130%
367-12-4	2-Fluorophenol	60%	58%	49%	16-130%
4165-60-0	Nitrobenzene-d5	67%	64%	57%	19-130%

* = Outside of Control Limits.

6.3.1
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Matrix Spike/Matrix Spike Duplicate Summary

Page 3 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MS	1G125886.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
OP12354-MSD	1G125887.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
D75022-11	1G125885.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Surrogate Recoveries	MS	MSD	D75022-11	Limits
4165-62-2	Phenol-d5	57%	55%	43%	18-130%
1718-51-0	Terphenyl-d14	90%	86%	73%	40-130%
118-79-6	2,4,6-Tribromophenol	63%	61%	56%	17-130%

- (a) Outside control limits due to possible matrix interference.
(b) High RPD due to possible sample nonhomogeneity.

* = Outside of Control Limits.



GC Semi-volatiles

QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12380-MB	GEH25192.D	1	09/22/15	TR	09/17/15	OP12380	GEH1243

The QC reported here applies to the following samples:

Method: SW846 8081A

D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.67	0.33	ug/kg	
319-84-6	alpha-BHC	ND	0.67	0.33	ug/kg	
319-85-7	beta-BHC	ND	0.67	0.37	ug/kg	
319-86-8	delta-BHC	ND	0.67	0.33	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.67	0.33	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.67	0.33	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.67	0.33	ug/kg	
12789-03-6	Chlordane	ND	17	10	ug/kg	
72-54-8	4,4'-DDD	ND	0.67	0.33	ug/kg	
72-55-9	4,4'-DDE	ND	0.67	0.33	ug/kg	
50-29-3	4,4'-DDT	ND	0.67	0.37	ug/kg	
60-57-1	Dieldrin	ND	0.67	0.33	ug/kg	
72-20-8	Endrin	ND	0.67	0.33	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.67	0.33	ug/kg	
53494-70-5	Endrin ketone	ND	0.67	0.33	ug/kg	
959-98-8	Endosulfan-I	ND	0.67	0.33	ug/kg	
33213-65-9	Endosulfan-II	ND	0.67	0.33	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.67	0.33	ug/kg	
76-44-8	Heptachlor	ND	0.67	0.33	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.67	0.33	ug/kg	
72-43-5	Methoxychlor	ND	0.67	0.50	ug/kg	
8001-35-2	Toxaphene	ND	33	23	ug/kg	

CAS No.	Surrogate Recoveries	Limits
877-09-8	Tetrachloro-m-xylene	88% 45-156%
877-09-8	Tetrachloro-m-xylene	87% 45-156%
2051-24-3	Decachlorobiphenyl	100% 41-179%
2051-24-3	Decachlorobiphenyl	100% 41-179%

Blank Spike Summary

Page 1 of 1

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12380-BS	GEH25193.D	1	09/22/15	TR	09/17/15	OP12380	GEH1243

The QC reported here applies to the following samples:

Method: SW846 8081A

D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
309-00-2	Aldrin	26.7	22.7	85	66-130
319-84-6	alpha-BHC	26.7	24.2	91	66-130
319-85-7	beta-BHC	26.7	24.7	93	67-130
319-86-8	delta-BHC	26.7	23.9	90	58-130
58-89-9	gamma-BHC (Lindane)	26.7	23.7	89	63-130
5103-71-9	alpha-Chlordane	26.7	25.4	95	67-130
5103-74-2	gamma-Chlordane	26.7	25.5	96	69-130
72-54-8	4,4'-DDD	26.7	29.0	109	70-130
72-55-9	4,4'-DDE	26.7	27.7	104	68-130
50-29-3	4,4'-DDT	26.7	27.8	104	55-132
60-57-1	Dieldrin	26.7	27.3	102	70-130
72-20-8	Endrin	26.7	30.2	113	55-130
7421-93-4	Endrin aldehyde	26.7	21.1	79	60-130
53494-70-5	Endrin ketone	26.7	25.9	97	67-133
959-98-8	Endosulfan-I	26.7	21.0	79	70-130
33213-65-9	Endosulfan-II	26.7	25.5	96	70-130
1031-07-8	Endosulfan sulfate	26.7	31.4	118	70-130
76-44-8	Heptachlor	26.7	25.4	95	61-130
1024-57-3	Heptachlor epoxide	26.7	25.1	94	70-130
72-43-5	Methoxychlor	26.7	27.6	104	64-140

CAS No.	Surrogate Recoveries	BSP	Limits
877-09-8	Tetrachloro-m-xylene	75%	45-156%
877-09-8	Tetrachloro-m-xylene	87%	45-156%
2051-24-3	Decachlorobiphenyl	101%	41-179%
2051-24-3	Decachlorobiphenyl	100%	41-179%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12380-MS	GEH25229.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
OP12380-MSD	GEH25230.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
D75022-1 ^a	GEH25231.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245

The QC reported here applies to the following samples:

Method: SW846 8081A

D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

CAS No.	Compound	D75022-1		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
309-00-2	Aldrin	ND		29.2	26.9	92	29.1	26.3	90	2	37-131/30
319-84-6	alpha-BHC	ND		29.2	27.3	93	29.1	26.0	89	5	13-154/30
319-85-7	beta-BHC	ND		29.2	28.2	97	29.1	26.7	92	5	10-160/30
319-86-8	delta-BHC	ND		29.2	24.9	85	29.1	23.8	82	5	28-135/30
58-89-9	gamma-BHC (Lindane)	ND		29.2	28.2	97	29.1	26.6	91	6	23-153/30
5103-71-9	alpha-Chlordane	17.8		29.2	46.5	98	29.1	43.6	89	6	37-140/30
5103-74-2	gamma-Chlordane	9.4		29.2	36.3	92	29.1	34.7	87	5	10-174/30
72-54-8	4,4'-DDD	ND		29.2	34.6	118	29.1	32.7	112	6	27-158/30
72-55-9	4,4'-DDE	5.9	J	29.2	34.3	97	29.1	32.2	90	6	28-163/30
50-29-3	4,4'-DDT	8.4		29.2	37.4	99	29.1	34.5	90	8	35-160/30
60-57-1	Dieldrin	ND		29.2	34.6	118	29.1	32.4	111	7	53-130/30
72-20-8	Endrin	ND		29.2	36.5	125	29.1	34.0	117	7	39-143/30
7421-93-4	Endrin aldehyde	ND		29.2	24.0	82	29.1	22.9	79	5	18-166/30
53494-70-5	Endrin ketone	ND		29.2	27.0	92	29.1	24.4	84	10	43-146/30
959-98-8	Endosulfan-I	ND		29.2	27.0	92	29.1	25.4	87	6	37-150/30
33213-65-9	Endosulfan-II	ND		29.2	26.3	90	29.1	24.9	86	5	42-156/30
1031-07-8	Endosulfan sulfate	ND		29.2	35.9	123	29.1	35.5	122	1	45-154/30
76-44-8	Heptachlor	ND		29.2	27.5	94	29.1	26.8	92	3	21-157/30
1024-57-3	Heptachlor epoxide	5.0	J	29.2	29.0	82	29.1	28.8	82	1	35-156/30
72-43-5	Methoxychlor	ND		29.2	32.8	112	29.1	30.9	106	6	34-182/30

CAS No.	Surrogate Recoveries	MS	MSD	D75022-1	Limits
877-09-8	Tetrachloro-m-xylene	83%	85%	83%	45-156%
877-09-8	Tetrachloro-m-xylene	91%	84%	83%	45-156%
2051-24-3	Decachlorobiphenyl	110%	133%	114%	41-179%
2051-24-3	Decachlorobiphenyl	109%	103%	105%	41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

* = Outside of Control Limits.

7.3.1
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Metals Analysis

QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16909
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date:

09/14/15

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.083	.00088	.0067	-0.00073 <0.083	

Associated samples MP16909: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16909
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 09/14/15

Metal	D74858-1 Original MS	Spikelot HGWSR1	QC % Rec	QC Limits
Mercury	0.046	0.40	0.38	93.2 75-125

Associated samples MP16909: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16909
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date:

09/14/15

Metal	D74858-1 Original MSD	Spikelot HGWSR1	MSD % Rec	QC RPD	QC Limit
Mercury	0.046	0.38	0.368	90.7	5.1 20

Associated samples MP16909: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16909
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 09/14/15

Metal	BSP Result	Spikelot HGWSR1	QC % Rec	QC Limits
Mercury	0.30	0.333	90.0	80-120

Associated samples MP16909: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

8.1.3
8

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/15/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	1.1	1.7	-0.010	<10
Antimony	3.0	.21	.82	-0.31	<3.0
Arsenic	2.5	.38	2.1	0.11	<2.5
Barium	1.0	.02	.03	0.080	<1.0
Beryllium	1.0	.09	.16	0.16	<1.0
Boron	5.0	.08	.29		
Cadmium	1.0	.02	.1	-0.010	<1.0
Calcium	40	.24	9.6	8.0	<40
Chromium	1.0	.03	.07	0.010	<1.0
Cobalt	0.50	.05	.12	0.13	<0.50
Copper	1.0	.08	.48	0.35	<1.0
Iron	7.0	.15	.69	7.0	* (a)
Lead	5.0	.21	.6	0.35	<5.0
Lithium	0.50	.04	.07		
Magnesium	20	.68	3.9	0.75	<20
Manganese	0.50	.05	.07	0.040	<0.50
Molybdenum	1.0	.04	.36		
Nickel	3.0	.05	.24	0.12	<3.0
Phosphorus	10	1.5	4.3		
Potassium	200	9.9	6	4.7	<200
Selenium	5.0	.71	1	0.26	<5.0
Silicon	5.0	.47	.91		
Silver	3.0	.03	.05	0.040	<3.0
Sodium	40	.73	1.5	2.7	<40
Strontium	5.0	.001	.03		
Thallium	1.0	.18	.86	0.19	<1.0
Tin	5.0	1.2	1.2		
Titanium	1.0	.01	.27		
Uranium	5.0	.29	.44		
Vanadium	1.0	.04	.07	-0.020	<1.0
Zinc	3.0	.04	.35	0.79	<3.0

Associated samples MP16910: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

09/15/15

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested
(a) All sample results < RL or > 10x MB concentration.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16910
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 09/15/15

Metal	D75022-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	13300	16600	548	602.6(a) 75-125
Antimony	0.0	7.6	55	27.6N(b) 75-125
Arsenic	8.8	110	110	92.4 75-125
Barium	229	461	219	105.9 75-125
Beryllium	1.3	51.5	54.8	91.7 75-125
Boron	anr			
Cadmium	0.59	52.7	54.8	95.2 75-125
Calcium	10600	13400	2740	102.3 75-125
Chromium	12.1	60.4	54.8	88.2 75-125
Cobalt	8.3	54.8	54.8	84.9 75-125
Copper	25.9	81.6	54.8	101.7 75-125
Iron	19400	22200	548	511.3(a) 75-125
Lead	44.1	138	110	85.7 75-125
Lithium				
Magnesium	3970	6920	2740	107.7 75-125
Manganese	453	515	54.8	113.2 75-125
Molybdenum	anr			
Nickel	10.4	55.7	54.8	82.7 75-125
Phosphorus				
Potassium	4390	7160	2740	101.2 75-125
Selenium	0.0	93.9	110	85.7 75-125
Silicon				
Silver	0.0	14.2	21.9	64.8N(b) 75-125
Sodium	284	2780	2740	91.2 75-125
Strontium	anr			
Thallium	3.4	97.4	110	85.8 75-125
Tin	anr			
Titanium	anr			
Uranium	anr			
Vanadium	39.9	94.4	54.8	99.5 75-125
Zinc	112	161	54.8	89.5 75-125

Associated samples MP16910: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/15/15

Metal	D75022-1 Original MS	Spikelot ICPALL2	QC % Rec	QC Limits
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- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16910
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date:

09/15/15

Metal	D75022-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	13300	16900	542	663.9(a)	1.8	20
Antimony	0.0	6.2	54	5.7N (b)	20.3 (c)	20
Arsenic	8.8	107	108	90.6	1.9	20
Barium	229	501	217	125.4N(b)	8.3	20
Beryllium	1.3	51.6	54.2	92.8	0.2	20
Boron	anr					
Cadmium	0.59	52.6	54.2	95.9	0.2	20
Calcium	10600	14000	2710	125.4N(b)	4.4	20
Chromium	12.1	58.9	54.2	86.3	2.5	20
Cobalt	8.3	55.4	54.2	86.9	1.1	20
Copper	25.9	82.2	54.2	103.8	0.7	20
Iron	19400	21000	542	295.1(a)	5.6	20
Lead	44.1	136	108	84.7	1.2	20
Lithium						
Magnesium	3970	6870	2710	107.0	0.7	20
Manganese	453	529	54.2	140.2(a)	2.3	20
Molybdenum	anr					
Nickel	10.4	55.8	54.2	83.7	1.2	20
Phosphorus						
Potassium	4390	7270	2710	106.2	1.5	20
Selenium	0.0	92.9	108	85.7	1.1	20
Silicon						
Silver	0.0	14.3	21.7	65.9N(b)	0.7	20
Sodium	284	2730	2710	90.2	1.8	20
Strontium	anr					
Thallium	3.4	97.4	108	86.7	0.0	20
Tin	anr					
Titanium	anr					
Uranium	anr					
Vanadium	39.9	90.1	54.2	92.6	4.7	20
Zinc	112	163	54.2	94.1	1.2	20

Associated samples MP16910: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

09/15/15

Metal	D75022-1 Original MSD	Spikelot ICPALL2	MSD % Rec	RPD	QC Limit
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- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference.
(c) High RPD due to possible sample matrix or nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16910
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 09/15/15

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	466	500	93.2	80-120
Antimony	45.8	50	91.6	80-120
Arsenic	105	100	105.0	80-120
Barium	197	200	98.5	80-120
Beryllium	54.5	50	109.0	80-120
Boron	anr			
Cadmium	54.2	50	108.4	80-120
Calcium	2500	2500	100.0	80-120
Chromium	50.5	50	101.0	80-120
Cobalt	50.6	50	101.2	80-120
Copper	52.1	50	104.2	80-120
Iron	498	500	99.6	80-120
Lead	104	100	104.0	80-120
Lithium				
Magnesium	2620	2500	104.8	80-120
Manganese	51.3	50	102.6	80-120
Molybdenum	anr			
Nickel	50.7	50	101.4	80-120
Phosphorus				
Potassium	2430	2500	97.2	80-120
Selenium	102	100	102.0	80-120
Silicon				
Silver	18.9	20	94.5	80-120
Sodium	2490	2500	99.6	80-120
Strontium	anr			
Thallium	105	100	105.0	80-120
Tin	anr			
Titanium	anr			
Uranium	anr			
Vanadium	50.4	50	100.8	80-120
Zinc	50.5	50	101.0	80-120

Associated samples MP16910: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/15/15

Metal	BSP Result	Spikelot ICPALL2	QC % Rec	QC Limits
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(anr) Analyte not requested

8.2.3
8

SERIAL DILUTION RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16910
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: ug/l

Prep Date: 09/15/15

Metal	D75022-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	123000	139000	2.7	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic	81.5	107	30.7 (a)	0-10
Barium	2130	2300	7.7	0-10
Beryllium	12.4	21.5	73.4 (a)	0-10
Boron	anr			
Cadmium	5.50	2.50	54.5 (a)	0-10
Calcium	98600	116000	17.5*(b)	0-10
Chromium	113	125	10.2*(b)	0-10
Cobalt	77.1	106	36.8*(b)	0-10
Copper	241	247	2.4	0-10
Iron	181000	204000	12.9*(b)	0-10
Lead	411	513	24.9*(b)	0-10
Lithium				
Magnesium	37000	41600	12.4*(b)	0-10
Manganese	4220	5050	19.6*(b)	0-10
Molybdenum	anr			
Nickel	97.2	122	25.5*(b)	0-10
Phosphorus				
Potassium	40800	44000	7.8	0-10
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium	2640	2780	5.0	0-10
Strontium	anr			
Thallium	32.0	89.5	179.7(a)	0-10
Tin	anr			
Titanium	anr			
Uranium	anr			
Vanadium	371	425	14.4*(b)	0-10
Zinc	1050	1350	29.0*(b)	0-10

Associated samples MP16910: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 09/15/15

Metal	D75022-1	Original	SDL 1:5	%DIF	QC	Limits
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- (anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
(b) Serial dilution indicates possible matrix interference.

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

09/16/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	1.1	1.7	-0.43	<10
Antimony	3.0	.21	.82	-0.050	<3.0
Arsenic	2.5	.38	2.1	-0.48	<2.5
Barium	1.0	.02	.03	0.050	<1.0
Beryllium	1.0	.09	.16	0.010	<1.0
Boron	5.0	.08	.29		
Cadmium	1.0	.02	.1	0.010	<1.0
Calcium	40	.24	9.6	1.7	<40
Chromium	1.0	.03	.07	0.010	<1.0
Cobalt	0.50	.05	.12	0.060	<0.50
Copper	1.0	.08	.48	0.35	<1.0
Iron	7.0	.15	.69	3.0	<7.0
Lead	5.0	.21	.6	0.31	<5.0
Lithium	0.50	.04	.07		
Magnesium	20	.68	3.9	0.48	<20
Manganese	0.50	.05	.07	0.040	<0.50
Molybdenum	1.0	.04	.36		
Nickel	3.0	.05	.24	0.14	<3.0
Phosphorus	10	1.5	4.3		
Potassium	200	9.9	6	2.2	<200
Selenium	5.0	.71	1	0.89	<5.0
Silicon	5.0	.47	.91		
Silver	3.0	.03	.05	0.020	<3.0
Sodium	40	.73	1.5	-0.42	<40
Strontium	5.0	.001	.03		
Thallium	1.0	.18	.86	0.060	<1.0
Tin	5.0	1.2	1.2		
Titanium	1.0	.01	.27		
Uranium	5.0	.29	.44		
Vanadium	1.0	.04	.07	0.0	<1.0
Zinc	3.0	.04	.35	0.24	<3.0

Associated samples MP16935: D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

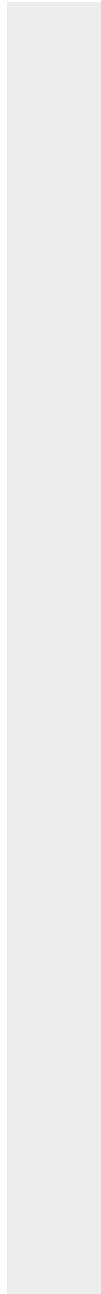
Methods: SW846 6010C
Units: mg/kg

Prep Date:

09/16/15

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16935
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date:

09/16/15

Metal	D75080-1 Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	14700	13000	526	-323.3(a	75-125
Antimony	0.0	11.1	52.5	21.2N(b)	75-125
Arsenic	9.3	106	105	91.9	75-125
Barium	518	861	210	163.1N(b	75-125
Beryllium	1.1	48.7	52.6	90.5	75-125
Boron					
Cadmium	0.34	50.4	52.6	95.2	75-125
Calcium	30200	62400	2630	1224.7(a	75-125
Chromium	45.4	78.9	52.6	63.7N(b)	75-125
Cobalt	9.2	51.0	52.6	79.5	75-125
Copper	16.0	61.8	52.6	87.1	75-125
Iron	21300	17600	526	-703.6(a	75-125
Lead	8.4	100	105	87.1	75-125
Lithium					
Magnesium	7280	11300	2630	152.9N(b	75-125
Manganese	365	369	52.6	7.6 (a)	75-125
Molybdenum					
Nickel	33.9	63.8	52.6	56.9N(b)	75-125
Phosphorus					
Potassium	888	3430	2630	96.7	75-125
Selenium	0.0	93.6	105	89.0	75-125
Silicon					
Silver	0.0	14.9	21	70.8N(b)	75-125
Sodium	7170	8670	2630	57.0N(b)	75-125
Strontium					
Thallium	4.2	91.5	105	83.0	75-125
Tin					
Titanium					
Uranium					
Vanadium	36.8	75.9	52.6	74.4N(b)	75-125
Zinc	47.4	80.6	52.6	63.1N(b)	75-125

Associated samples MP16935: D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/16/15

Metal	D75080-1 Original MS	Spikelot ICPALL2	QC % Rec	QC Limits
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- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16935
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date:

09/16/15

Metal	D75080-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	14700	15400	531	131.9(a)	16.9	20
Antimony	0.0	11.3	58	21.2N(b)	1.8	20
Arsenic	9.3	110	106	94.8	3.7	20
Barium	518	752	212	110.2	13.5	20
Beryllium	1.1	51.3	53.1	94.6	5.2	20
Boron						
Cadmium	0.34	51.9	53.1	97.1	2.9	20
Calcium	30200	32900	2650	101.7	61.9 (c)	20
Chromium	45.4	92.7	53.1	89.1	16.1	20
Cobalt	9.2	54.4	53.1	85.1	6.5	20
Copper	16.0	66.9	53.1	95.9	7.9	20
Iron	21300	21100	531	-37.7(a)	18.1	20
Lead	8.4	105	106	91.0	4.9	20
Lithium						
Magnesium	7280	9440	2650	81.4	17.9	20
Manganese	365	409	53.1	82.9	10.3	20
Molybdenum						
Nickel	33.9	75.3	53.1	78.0	16.5	20
Phosphorus						
Potassium	888	3390	2650	94.3	1.2	20
Selenium	0.0	94.4	106	88.9	0.9	20
Silicon						
Silver	0.0	14.5	21.2	68.3N(b)	2.7	20
Sodium	7170	10500	2650	125.5N(b)	19.1	20
Strontium						
Thallium	4.2	97.9	106	88.3	6.8	20
Tin						
Titanium						
Uranium						
Vanadium	36.8	84.5	53.1	89.9	10.7	20
Zinc	47.4	90.1	53.1	80.4	11.1	20

Associated samples MP16935: D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

09/16/15

Metal	D75080-1 Original MSD	Spikelot ICPALL2	MSD % Rec	RPD	QC Limit
-------	--------------------------	---------------------	--------------	-----	-------------

- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference.
(c) High RPD due to possible sample matrix or nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16935
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date:

09/16/15

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	478	500	95.6	80-120
Antimony	46.3	50	92.6	80-120
Arsenic	105	100	105.0	80-120
Barium	205	200	102.5	80-120
Beryllium	55.1	50	110.2	80-120
Boron				
Cadmium	52.9	50	105.8	80-120
Calcium	2490	2500	99.6	80-120
Chromium	49.4	50	98.8	80-120
Cobalt	50.0	50	100.0	80-120
Copper	52.2	50	104.4	80-120
Iron	490	500	98.0	80-120
Lead	103	100	103.0	80-120
Lithium				
Magnesium	2550	2500	102.0	80-120
Manganese	50.7	50	101.4	80-120
Molybdenum				
Nickel	49.9	50	99.8	80-120
Phosphorus				
Potassium	2450	2500	98.0	80-120
Selenium	102	100	102.0	80-120
Silicon				
Silver	19.5	20	97.5	80-120
Sodium	2470	2500	98.8	80-120
Strontium				
Thallium	105	100	105.0	80-120
Tin				
Titanium				
Uranium				
Vanadium	49.9	50	99.8	80-120
Zinc	49.1	50	98.2	80-120

Associated samples MP16935: D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/16/15

Metal	BSP Result	Spikelot ICPALL2	QC % Rec	QC Limits
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(anr) Analyte not requested

8.3.3
8

SERIAL DILUTION RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16935
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: ug/l

Prep Date: 09/16/15

Metal	D75080-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	145000	147000	0.8	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic	91.4	158	72.3 (a)	0-10
Barium	5110	5390	5.4	0-10
Beryllium	11.3	14.0	23.9 (a)	0-10
Boron				
Cadmium	3.40	0.00	100.0(a)	0-10
Calcium	298000	353000	18.2*(b)	0-10
Chromium	448	510	13.9*(b)	0-10
Cobalt	91.1	121	32.3*(b)	0-10
Copper	158	145	7.9	0-10
Iron	210000	239000	14.1*(b)	0-10
Lead	83.2	113	35.8 (a)	0-10
Lithium				
Magnesium	71800	80700	12.3*(b)	0-10
Manganese	3600	4230	17.4*(b)	0-10
Molybdenum				
Nickel	334	398	18.9*(b)	0-10
Phosphorus				
Potassium	8760	8720	0.5	0-10
Selenium	0.00	40.0	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium	70800	77800	9.9	0-10
Strontium				
Thallium	41.2	113	173.1(a)	0-10
Tin				
Titanium				
Uranium				
Vanadium	363	409	12.4*(b)	0-10
Zinc	468	587	25.4*(b)	0-10

Associated samples MP16935: D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 09/16/15

Metal	D75080-1	Original	SDL 1:5	%DIF	QC	Limits
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- (anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
(b) Serial dilution indicates possible matrix interference.



General Chemistry

QC Data Summaries

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Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
pH	GN31540			su	8.00	7.97	99.6	99.1-100.9%

Associated Samples:

Batch GN31540: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10
(*) Outside of QC limits



Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody



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CHAIN OF CUSTODY

Page 1 of 1

4236 Youngfield Street, Wheat Ridge, CO 80033
TEL: 303-425-6621 FAX: 303-425-6554
www.acceltest.com

Client / Reporting Information		Project Information						Requested Analysis (see TEST CODE sheet)						
Company Name Accutest Laboratories		Project Name DUG												
Street Address 4038 Youngfield Street		Site ID Being Information is different from Report(s)												
City Wheat Ridge, CO	State 80033	Zip 80033	City CITY	State STATE	Comments Comments None									
Project Contact Email jerryayd_jerryayd@accutest.com		Project # 303-425-6021		Street Address										
Phone # 303-425-6021		Fax # Client Purchase Order #		City CITY	State STATE	Zip ZIP								
Sampler's Name(s) RWN		Phone / Project Manager		Address										
Acceptor's Name Field ID : Point of Collector		MED-AD-Via #		Collection		Sample by	Method	Analysis	Number of preserved Subs				WATER/HR	LAB USE ONLY
				Date 9/10/15	Time 12:35:00 PM				HW	HW	HW	HW		
11M	BO-SO-11-00-02											X		
11D	BO-SO-11-00-02											X		
11	BO-SO-11-00-02											X		
12	BO-SO-12-00-02											X		
13	BO-SO-13-00-02											X		
14	BO-SO-14-00-02											X		
15	BO-SO-15-00-02											X		
INITIAL ASSESSMENT <i>OK</i>														
LABEL VERIFICATION <i>OK</i>														
Turnaround Time / Business days		Data Device /able Information						Comments / Special Instructions						
Approved By (Acceptor PW) : Date:		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3-6) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" <small>Commercial "A" = Results Only Commercial "B" = Results + QC Summary NJ Reduced = Results + QC Summary + Partial Raw Data</small>						<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input checked="" type="checkbox"/> State UCMR/Md <input type="checkbox"/> EDD Formatted <input type="checkbox"/> Other _____						
<input type="checkbox"/> 95% 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input checked="" type="checkbox"/> none Due 9/24/2015 <small>Emergency & RUSH - 24 hr data available via LabLink</small>														
Sample Custody must be documented below each time samples change possession, including courier delivery.														
Relinquished by Sampler <i>JAY</i>	Date/Tm 8/15/15	Received By FedEx	Relinquished By 2	Received By FedEx	Date/Tm 9/15/15 05:40	Received By 4	Received By FedEx	Date/Tm 9/15/15 05:40	Received By 4	Received By FedEx	Date/Tm 9/15/15 05:40	Received By 4	Cooler Temp 21	
Relinquished by Sampler	Date/Tm	Received By	Relinquished By	Received By	Date/Tm	Relinquished By	Received By	Date/Tm	Received By	Received By	Date/Tm	Received By	Cooler Temp	
Relinquished by Sampler	Date/Tm	Received By	Relinquished By	Received By	Date/Tm	Relinquished By	Received By	Date/Tm	Received By	Received By	Date/Tm	Received By	Cooler Temp	
Relinquished by Sampler	Date/Tm	Received By	Relinquished By	Received By	Date/Tm	Relinquished By	Received By	Date/Tm	Received By	Received By	Date/Tm	Received By	Cooler Temp	

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D75022: Chain of Custody

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Accutest New Jersey



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D75022 Client: _____ Project: _____
Date / Time Received: 9/12/2015 9:40:00 AM Delivery Method: _____ Airbill #'s: _____

Cooler Temps (Raw Measured) °C: Cooler 1: (2.1);

Cooler Temps (Corrected) °C: Cooler 1: (2.3);

Cooler Security Y or N Y or N
1. Custody Seals Present: 3. COC Present:
2. Custody Seals Intact: 4. Smpl Dates/Time OK

Cooler Temperature Y or N
1. Temp criteria achieved:
2. Cooler temp verification: IR Gun
3. Cooler media: Ice (Bag)
4. No. Coolers: 1

Quality Control Preservation Y or N N/A
1. Trip Blank present / cooler:
2. Trip Blank listed on COC:
3. Samples preserved properly:
4. VOCs headspace free:

Sample Integrity - Documentation		<u>Y or N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Sample Integrity - Condition		<u>Y or N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

Sample Integrity - Instructions		<u>Y or N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
P: 732.329.3499

Dayton, New Jersey
www.accutest.com

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D75022: Chain of Custody

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GC/MS Volatiles

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5628-MB	3C123201.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.2	ug/kg	
71-43-2	Benzene	ND	0.50	0.13	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.16	ug/kg	
75-25-2	Bromoform	ND	5.0	0.24	ug/kg	
74-83-9	Bromomethane	ND	5.0	0.36	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.23	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.23	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.16	ug/kg	
75-00-3	Chloroethane	ND	5.0	0.48	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	25	1.1	ug/kg	
67-66-3	Chloroform	ND	2.0	0.15	ug/kg	
74-87-3	Chloromethane	ND	5.0	0.26	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.21	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.12	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.16	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.23	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.14	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.13	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.78	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.59	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.24	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.12	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.18	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.16	ug/kg	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.46	ug/kg	
75-09-2	Methylene chloride	ND	5.0	0.98	ug/kg	
100-42-5	Styrene	ND	2.0	0.18	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.18	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.30	ug/kg	
108-88-3	Toluene	ND	1.0	0.21	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.15	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.15	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.15	ug/kg	

11.1
11

Method Blank Summary

Page 2 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5628-MB	3C123201.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Result	RL	MDL	Units	Q
108-05-4	Vinyl Acetate	ND	10	1.8	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.20	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.27	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	93%
17060-07-0	1,2-Dichloroethane-D4	91%
2037-26-5	Toluene-D8	100%
460-00-4	4-Bromofluorobenzene	86%

11.1.1
11

Blank Spike Summary

Page 1 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5628-BS	3C123202.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	50	28.5	57	30-150
71-43-2	Benzene	50	44.7	89	77-122
75-27-4	Bromodichloromethane	50	51.8	104	82-130
75-25-2	Bromoform	50	64.1	128	78-134
74-83-9	Bromomethane	50	46.3	93	56-141
78-93-3	2-Butanone (MEK)	50	46.3	93	61-139
75-15-0	Carbon disulfide	50	40.2	80	68-131
56-23-5	Carbon tetrachloride	50	48.6	97	73-139
108-90-7	Chlorobenzene	50	48.2	96	79-120
75-00-3	Chloroethane	50	50.0	100	64-150
110-75-8	2-Chloroethyl vinyl ether	250	292	117	39-167
67-66-3	Chloroform	50	45.2	90	77-123
74-87-3	Chloromethane	50	38.7	77	50-140
124-48-1	Dibromochloromethane	50	54.2	108	82-129
95-50-1	1,2-Dichlorobenzene	50	50.7	101	79-118
541-73-1	1,3-Dichlorobenzene	50	47.9	96	76-119
106-46-7	1,4-Dichlorobenzene	50	49.3	99	75-118
75-34-3	1,1-Dichloroethane	50	42.5	85	78-129
107-06-2	1,2-Dichloroethane	50	50.4	101	77-140
75-35-4	1,1-Dichloroethene	50	42.4	85	71-128
156-59-2	cis-1,2-Dichloroethene	50	42.5	85	73-123
156-60-5	trans-1,2-Dichloroethene	50	42.4	85	72-122
78-87-5	1,2-Dichloropropane	50	46.4	93	80-129
10061-01-5	cis-1,3-Dichloropropene	50	49.5	99	75-124
10061-02-6	trans-1,3-Dichloropropene	50	49.9	100	75-129
100-41-4	Ethylbenzene	50	48.2	96	75-121
591-78-6	2-Hexanone	50	63.8	128	63-140
108-10-1	4-Methyl-2-pentanone(MIBK)	50	66.5	133	73-141
75-09-2	Methylene chloride	50	43.9	88	71-124
100-42-5	Styrene	50	54.6	109	79-125
79-34-5	1,1,2,2-Tetrachloroethane	50	46.5	93	72-121
127-18-4	Tetrachloroethene	50	48.0	96	70-135
108-88-3	Toluene	50	47.0	94	75-123
71-55-6	1,1,1-Trichloroethane	50	47.3	95	75-134
79-00-5	1,1,2-Trichloroethane	50	53.9	108	78-130
79-01-6	Trichloroethene	50	48.4	97	79-127

* = Outside of Control Limits.

11.2.1
11

Blank Spike Summary

Page 2 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5628-BS	3C123202.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
108-05-4	Vinyl Acetate	50	50.7	101	78-140
75-01-4	Vinyl chloride	50	41.7	83	57-136
1330-20-7	Xylene (total)	150	151	101	76-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	70-122%
17060-07-0	1,2-Dichloroethane-D4	100%	68-124%
2037-26-5	Toluene-D8	102%	77-125%
460-00-4	4-Bromofluorobenzene	87%	72-130%

11.2.1
11

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D75022-11MS	3C123203.D	1	09/15/15	PS	n/a	n/a	V3C5628
D75022-11MSD	3C123204.D	1	09/15/15	PS	n/a	n/a	V3C5628
D75022-11	3C123206.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	D75022-11		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
67-64-1	Acetone	ND		58.7	32.5	55	58.7	36.5	62	12	10-180/33
71-43-2	Benzene	ND		58.7	41.7	71	58.7	45.8	78	9	48-136/30
75-27-4	Bromodichloromethane	ND		58.7	48.6	83	58.7	52.1	89	7	50-145/28
75-25-2	Bromoform	ND		58.7	52.4	89	58.7	53.2	91	2	39-148/24
74-83-9	Bromomethane	ND		58.7	45.1	77	58.7	49.0	84	8	12-156/32
78-93-3	2-Butanone (MEK)	ND		58.7	42.7	73	58.7	40.7	69	5	26-164/30
75-15-0	Carbon disulfide	ND		58.7	37.8	64	58.7	41.4	71	9	34-146/31
56-23-5	Carbon tetrachloride	ND		58.7	42.4	72	58.7	45.7	78	7	43-152/31
108-90-7	Chlorobenzene	ND		58.7	39.8	68	58.7	42.1	72	6	38-144/29
75-00-3	Chloroethane	ND		58.7	50.7	86	58.7	56.9	97	12	26-154/34
110-75-8	2-Chloroethyl vinyl ether	ND		293	281	96	293	292	100	4	23-163/26
67-66-3	Chloroform	ND		58.7	43.1	73	58.7	46.4	79	7	52-134/27
74-87-3	Chloromethane	ND		58.7	41.3	70	58.7	46.0	78	11	41-142/28
124-48-1	Dibromochloromethane	ND		58.7	48.2	82	58.7	51.3	87	6	49-142/24
95-50-1	1,2-Dichlorobenzene	ND		58.7	31.7	54	58.7	31.2	53	2	30-144/30
541-73-1	1,3-Dichlorobenzene	ND		58.7	31.1	53	58.7	30.8	53	1	28-148/31
106-46-7	1,4-Dichlorobenzene	ND		58.7	32.3	55	58.7	32.0	55	1	30-142/31
75-34-3	1,1-Dichloroethane	ND		58.7	41.5	71	58.7	45.1	77	8	54-137/28
107-06-2	1,2-Dichloroethane	ND		58.7	49.5	84	58.7	53.6	91	8	56-140/24
75-35-4	1,1-Dichloroethene	ND		58.7	40.6	69	58.7	44.6	76	9	41-143/30
156-59-2	cis-1,2-Dichloroethene	ND		58.7	40.7	69	58.7	44.6	76	9	45-137/28
156-60-5	trans-1,2-Dichloroethene	ND		58.7	40.6	69	58.7	43.8	75	8	42-141/30
78-87-5	1,2-Dichloropropane	ND		58.7	44.6	76	58.7	49.0	84	9	53-139/27
10061-01-5	cis-1,3-Dichloropropene	ND		58.7	45.6	78	58.7	47.4	81	4	41-144/26
10061-02-6	trans-1,3-Dichloropropene	ND		58.7	45.7	78	58.7	47.8	81	4	36-148/27
100-41-4	Ethylbenzene	ND		58.7	38.4	65	58.7	40.0	68	4	34-145/29
591-78-6	2-Hexanone	ND		58.7	53.5	91	58.7	47.1	80	13	16-176/32
108-10-1	4-Methyl-2-pentanone(MIBK)	ND		58.7	62.5	107	58.7	64.1	109	3	33-154/29
75-09-2	Methylene chloride	ND		58.7	43.8	75	58.7	49.3	84	12	47-133/25
100-42-5	Styrene	ND		58.7	42.1	72	58.7	42.9	73	2	32-156/31
79-34-5	1,1,2,2-Tetrachloroethane	ND		58.7	41.5	71	58.7	42.6	73	3	31-149/25
127-18-4	Tetrachloroethene	ND		58.7	34.8	59	58.7	36.2	62	4	34-163/31
108-88-3	Toluene	ND		58.7	41.1	70	58.7	44.1	75	7	40-141/30
71-55-6	1,1,1-Trichloroethane	ND		58.7	42.8	73	58.7	46.1	79	7	48-144/29
79-00-5	1,1,2-Trichloroethane	ND		58.7	50.4	86	58.7	53.1	91	5	43-146/27
79-01-6	Trichloroethene	ND		58.7	43.2	74	58.7	46.5	79	7	42-152/29

* = Outside of Control Limits.

11.3.1
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Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D75022-11MS	3C123203.D	1	09/15/15	PS	n/a	n/a	V3C5628
D75022-11MSD	3C123204.D	1	09/15/15	PS	n/a	n/a	V3C5628
D75022-11	3C123206.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	D75022-11		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
108-05-4	Vinyl Acetate	ND		58.7	3.3	6* a	58.7	4.0	7* a	19	19-146/37
75-01-4	Vinyl chloride	ND		58.7	44.6	76	58.7	49.6	85	11	38-149/29
1330-20-7	Xylene (total)	ND		176	119	68	176	124	70	4	34-146/29

CAS No.	Surrogate Recoveries	MS	MSD	D75022-11	Limits
1868-53-7	Dibromofluoromethane	97%	97%	100%	70-122%
17060-07-0	1,2-Dichloroethane-D4	101%	98%	108%	68-124%
2037-26-5	Toluene-D8	102%	103%	100%	77-125%
460-00-4	4-Bromofluorobenzene	92%	89%	92%	72-130%

(a) Outside control limits due to matrix interference.

* = Outside of Control Limits.

11.3.1
11



09/24/15



Technical Report for

Weston Solutions, Inc.

DUG

Accutest Job Number: D75022

Sampling Date: 09/10/15

Report to:

**Weston Solutions, Inc.
1435 Garrison Street
Lakewood, CO 80215
roy.weindorf@westonsolutions.com**

ATTN: Roy Weindorf

Total number of pages in report: 128



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink that appears to read "Scott Heideman".

Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY
CO (CO00049), EPA 524.2 Provisional

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Test results relate only to samples analyzed.

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Sample Summary

Weston Solutions, Inc.

Job No: D75022

DUG

Sample Number	Collected Date	Time By	Matrix Received	Code Type	Client Sample ID	
D75022-1	09/10/15	09:30 RW	09/10/15	SO	Soil	BO-SO-01-00-02
D75022-1D	09/10/15	09:30 RW	09/10/15	SO	Soil Dup/MSD	BO-SO-01-00-02
D75022-1M	09/10/15	09:30 RW	09/10/15	SO	Soil Matrix Spike	BO-SO-01-00-02
D75022-2	09/10/15	10:41 RW	09/10/15	SO	Soil	BO-SO-02-02-06
D75022-3	09/10/15	11:57 RW	09/10/15	SO	Soil	BO-SO-03-06-18
D75022-4	09/10/15	09:50 RW	09/10/15	SO	Soil	BO-SO-04-00-02
D75022-5	09/10/15	11:05 RW	09/10/15	SO	Soil	BO-SO-05-02-06
D75022-6	09/10/15	12:14 RW	09/10/15	SO	Soil	BO-SO-06-06-18
D75022-7	09/10/15	10:07 RW	09/10/15	SO	Soil	BO-SO-07-00-02
D75022-8	09/10/15	11:22 RW	09/10/15	SO	Soil	BO-SO-08-02-06
D75022-9	09/10/15	12:27 RW	09/10/15	SO	Soil	BO-SO-09-06-18
D75022-10	09/10/15	10:41 RW	09/10/15	SO	Soil	BO-SO-10-02-06
D75022-11	09/10/15	12:35 RW	09/10/15	SO	Soil	BO-SO-11-00-02

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary

(continued)

Weston Solutions, Inc.

Job No: D75022

DUG

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D75022-11D	09/10/15	12:35 RW	09/10/15	SO	Soil Dup/MSD	BO-SO-11-00-02
D75022-11M	09/10/15	12:35 RW	09/10/15	SO	Soil Matrix Spike	BO-SO-11-00-02
D75022-12	09/10/15	12:37 RW	09/10/15	SO	Soil	BO-SO-12-00-02
D75022-13	09/10/15	12:36 RW	09/10/15	SO	Soil	BO-SO-13-00-02
D75022-14	09/10/15	12:38 RW	09/10/15	SO	Soil	BO-SO-14-00-02
D75022-15	09/10/15	12:38 RW	09/10/15	SO	Soil	BO-SO-15-00-02

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Weston Solutions, Inc.

Job No D75022

Site: DUG

Report Date 9/24/2015 4:02:33 PM

On 09/10/2015, 15 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 5.7 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D75022 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix: SO

Batch ID: N:V3C5628

- The data for SW846 8260C meets quality control requirements.
- D75022-11 through -15: Analysis performed at Accutest Laboratories, Dayton, NJ.

Extractables by GCMS By Method SW846 8270C

Matrix: SO

Batch ID: OP12354

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D75022-11MS, D75022-11MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike (MS) recovery(s) of 3,3'-Dichlorobenzidine, Benzoic Acid are outside control limits. Outside control limits due to possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of 3,3'-Dichlorobenzidine, Benzoic Acid, 2,4-Dinitrophenol are outside control limits. Probable cause due to matrix interference.
- The RPD(s) for the MS and MSD recoveries of 2,4-Dinitrophenol, Hexachlorocyclopentadiene are outside control limits for sample OP12354-MSD. High RPD due to possible sample nonhomogeneity.

Extractables by GC By Method SW846 8081A

Matrix: SO

Batch ID: OP12380

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D75022-1MS, D75022-1MSD were used as the QC samples indicated.
- D75022-1 through -10: Elevated reporting limits due to sample matrix, dilution required during sample analysis.

Metals By Method SW846 6010C

Matrix: SO

Batch ID: MP16910

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D75022-1MS, D75022-1MSD, D75022-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Antimony, Silver are outside control limits. Spike recovery indicates possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of Barium, Silver, Antimony are outside control limits. High RPD due to possible sample matrix or nonhomogeneity.
- The matrix spike (MS) recovery(s) of Aluminum, Iron are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The RPD(s) for the MS and MSD recoveries of Antimony are outside control limits for sample MP16910-S2. High RPD due to possible sample matrix or nonhomogeneity.
- The serial dilution RPD(s) for Arsenic, Beryllium, Cadmium, Thallium, Calcium, Chromium, Cobalt, Iron, Lead, Magnesium, Manganese, Nickel, Vanadium, Zinc are outside control limits for sample MP16910-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- D75022-1 for Silver: Elevated detection limit due to dilution required for possible matrix interference.
- D75022-4 for Selenium: Elevated detection limit due to dilution required for possible matrix interference.
- MP16910-MB1 for Iron: All sample results < RL or > 10x MB concentration.
- MP16910-SD1 for Chromium,Calcium,Nickel, Vanadium,Magnesium,Zinc,Iron, Lead, Manganese, Cobalt: Serial dilution indicates possible matrix interference.
- D75022-2 through -7 for Silver: Elevated detection limit due to dilution required for possible matrix interference.

Matrix: SO

Batch ID: MP16935

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D75080-1MS, D75080-1MSD, D75080-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Silver, Antimony, Barium, Chromium, Magnesium, Nickel, Sodium, Vanadium, Zinc are outside control limits. Spike recovery indicates possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of Antimony, Silver, Sodium are outside control limits. Probable cause due to matrix interference.
- The matrix spike (MS) recovery(s) of Aluminum, Calcium, Iron, Manganese are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The RPD(s) for the MS and MSD recoveries of Calcium are outside control limits for sample MP16935-S2. High RPD due to possible sample matrix or nonhomogeneity.
- The serial dilution RPD(s) for Arsenic, Beryllium, Cadmium, Lead, Thallium, Calcium, Chromium, Cobalt, Iron, Magnesium, Manganese, Nickel, Vanadium, Zinc are outside control limits for sample MP16935-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP16935-SD1 for Calcium,Cobalt,Chromium, Magnesium, Vanadium, Manganese: Serial dilution indicates possible matrix interference.
- MP16935-SD1 for Iron,Nickel, Zinc: Serial dilution indicates possible matrix interference.
- D75022-8,-9,-10 for Silver: Elevated detection limit due to dilution required for possible matrix interference.

Metals By Method SW846 7471B

Matrix: SO

Batch ID: MP16909

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D74858-1MS, D74858-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method SM2540G-2011 M

Matrix: SO

Batch ID: GN31531

- The data for SM2540G-2011 M meets quality control requirements.

Matrix: SO

Batch ID: GN31541

- The data for SM2540G-2011 M meets quality control requirements.

Wet Chemistry By Method SW846 9045D

Matrix: SO

Batch ID: GN31540

- The following samples were run outside of holding time for method SW846 9045D: D75022-1, D75022-10, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Accutest Mountain States

Job No D75022

Site: WESTCOL: DUG

Report Date 9/22/2015 9:24:26 AM

On 09/10/2015, 5 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a maximum corrected temperature of 2.3 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of D75022 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix: SO

Batch ID: V3C5628

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D75022-11MS, D75022-11MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Vinyl Acetate are outside control limits. Outside control limits due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Vinyl Acetate are outside control limits. Outside control limits due to matrix interference.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

D75022-1 BO-SO-01-00-02

alpha-Chlordane ^a	17.8	7.3	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	9.4	7.3	3.6	ug/kg	SW846 8081A
4,4'-DDE ^a	5.9 J	7.3	3.6	ug/kg	SW846 8081A
4,4'-DDT ^a	8.4	7.3	4.0	ug/kg	SW846 8081A
Heptachlor epoxide ^a	5.0 J	7.3	3.6	ug/kg	SW846 8081A
Aluminum	13300	11		mg/kg	SW846 6010C
Arsenic	8.8	2.7		mg/kg	SW846 6010C
Barium	229	1.1		mg/kg	SW846 6010C
Beryllium	1.3	1.1		mg/kg	SW846 6010C
Calcium	10600	43		mg/kg	SW846 6010C
Chromium	12.1	1.1		mg/kg	SW846 6010C
Cobalt	8.3	0.54		mg/kg	SW846 6010C
Copper	25.9	1.1		mg/kg	SW846 6010C
Iron	19400	7.5		mg/kg	SW846 6010C
Lead	44.1	5.4		mg/kg	SW846 6010C
Magnesium	3970	21		mg/kg	SW846 6010C
Manganese	453	0.54		mg/kg	SW846 6010C
Nickel	10.4	3.2		mg/kg	SW846 6010C
Potassium	4390	210		mg/kg	SW846 6010C
Sodium	284	43		mg/kg	SW846 6010C
Thallium	3.4	1.1		mg/kg	SW846 6010C
Vanadium	39.9	1.1		mg/kg	SW846 6010C
Zinc	112	3.2		mg/kg	SW846 6010C
pH	7.50			su	SW846 9045D

D75022-2 BO-SO-02-02-06

alpha-Chlordane ^a	15.6	7.2	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	9.6	7.2	3.6	ug/kg	SW846 8081A
4,4'-DDE ^a	6.6 J	7.2	3.6	ug/kg	SW846 8081A
4,4'-DDT ^a	10.6	7.2	4.0	ug/kg	SW846 8081A
Die�drin ^a	5.1 J	7.2	3.6	ug/kg	SW846 8081A
Heptachlor epoxide ^a	4.4 J	7.2	3.6	ug/kg	SW846 8081A
Aluminum	18100	22		mg/kg	SW846 6010C
Arsenic	8.7	2.7		mg/kg	SW846 6010C
Barium	280	1.1		mg/kg	SW846 6010C
Beryllium	1.6	1.1		mg/kg	SW846 6010C
Calcium	11400	43		mg/kg	SW846 6010C
Chromium	12.5	1.1		mg/kg	SW846 6010C
Cobalt	8.9	0.54		mg/kg	SW846 6010C
Copper	30.7	2.2		mg/kg	SW846 6010C
Iron	22100	7.6		mg/kg	SW846 6010C
Lead	40.5	5.4		mg/kg	SW846 6010C

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

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Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Magnesium	4420	22			mg/kg	SW846 6010C
Manganese	547	0.54			mg/kg	SW846 6010C
Mercury	0.088	0.083			mg/kg	SW846 7471B
Nickel	10.4	3.2			mg/kg	SW846 6010C
Potassium	4300	220			mg/kg	SW846 6010C
Sodium	392	43			mg/kg	SW846 6010C
Thallium	3.8	1.1			mg/kg	SW846 6010C
Vanadium	48.7	1.1			mg/kg	SW846 6010C
Zinc	126	3.2			mg/kg	SW846 6010C
pH	7.47				su	SW846 9045D

D75022-3 BO-SO-03-06-18

alpha-Chlordane ^a	4.4 J	7.3	3.7	ug/kg	SW846 8081A
4,4'-DDT ^a	4.6 J	7.3	4.0	ug/kg	SW846 8081A
Dieldrin ^a	9.9	7.3	3.7	ug/kg	SW846 8081A
Aluminum	18200	22		mg/kg	SW846 6010C
Arsenic	9.1	2.8		mg/kg	SW846 6010C
Barium	275	1.1		mg/kg	SW846 6010C
Beryllium	1.7	1.1		mg/kg	SW846 6010C
Calcium	12700	44		mg/kg	SW846 6010C
Chromium	13.5	1.1		mg/kg	SW846 6010C
Cobalt	10.4	0.55		mg/kg	SW846 6010C
Copper	26.2	2.2		mg/kg	SW846 6010C
Iron	23300	7.8		mg/kg	SW846 6010C
Lead	34.7	5.5		mg/kg	SW846 6010C
Magnesium	4610	22		mg/kg	SW846 6010C
Manganese	561	0.55		mg/kg	SW846 6010C
Mercury	0.12	0.089		mg/kg	SW846 7471B
Nickel	10.3	3.3		mg/kg	SW846 6010C
Potassium	3470	220		mg/kg	SW846 6010C
Sodium	601	44		mg/kg	SW846 6010C
Thallium	3.7	1.1		mg/kg	SW846 6010C
Vanadium	51.0	1.1		mg/kg	SW846 6010C
Zinc	113	3.3		mg/kg	SW846 6010C
pH	8.13			su	SW846 9045D

D75022-4 BO-SO-04-00-02

alpha-Chlordane ^a	9.8	7.1	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	6.8 J	7.1	3.6	ug/kg	SW846 8081A
4,4'-DDT ^a	3.9 J	7.1	3.9	ug/kg	SW846 8081A
Aluminum	20300	21		mg/kg	SW846 6010C
Arsenic	9.4	2.6		mg/kg	SW846 6010C
Barium	266	1.1		mg/kg	SW846 6010C

Summary of Hits

Page 3 of 8

Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Beryllium		1.4	1.1		mg/kg	SW846 6010C
Calcium		11700	42		mg/kg	SW846 6010C
Chromium		11.2	1.1		mg/kg	SW846 6010C
Cobalt		7.7	0.53		mg/kg	SW846 6010C
Copper		24.1	2.1		mg/kg	SW846 6010C
Iron		20600	7.4		mg/kg	SW846 6010C
Lead		37.6	5.3		mg/kg	SW846 6010C
Magnesium		4070	21		mg/kg	SW846 6010C
Manganese		495	0.53		mg/kg	SW846 6010C
Nickel		8.0	3.2		mg/kg	SW846 6010C
Potassium		4540	210		mg/kg	SW846 6010C
Sodium		321	42		mg/kg	SW846 6010C
Vanadium		45.1	1.1		mg/kg	SW846 6010C
Zinc		113	3.2		mg/kg	SW846 6010C
pH		7.58			su	SW846 9045D

D75022-5 BO-SO-05-02-06

alpha-Chlordane ^a	5.1 J	7.2	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	4.0 J	7.2	3.6	ug/kg	SW846 8081A
4,4' -DDT ^a	5.2 J	7.2	4.0	ug/kg	SW846 8081A
Aluminum	14600	21		mg/kg	SW846 6010C
Arsenic	6.3	2.7		mg/kg	SW846 6010C
Barium	290	1.1		mg/kg	SW846 6010C
Beryllium	1.3	1.1		mg/kg	SW846 6010C
Calcium	10900	43		mg/kg	SW846 6010C
Chromium	10.6	1.1		mg/kg	SW846 6010C
Cobalt	7.1	0.54		mg/kg	SW846 6010C
Copper	24.1	2.1		mg/kg	SW846 6010C
Iron	19200	7.5		mg/kg	SW846 6010C
Lead	34.7	5.4		mg/kg	SW846 6010C
Magnesium	3800	21		mg/kg	SW846 6010C
Manganese	437	0.54		mg/kg	SW846 6010C
Nickel	8.8	3.2		mg/kg	SW846 6010C
Potassium	4070	210		mg/kg	SW846 6010C
Sodium	419	43		mg/kg	SW846 6010C
Thallium	1.4	1.1		mg/kg	SW846 6010C
Vanadium	43.4	1.1		mg/kg	SW846 6010C
Zinc	111	3.2		mg/kg	SW846 6010C
pH	7.54			su	SW846 9045D

D75022-6 BO-SO-06-06-18

alpha-Chlordane ^a	11.0	7.2	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	9.6	7.2	3.6	ug/kg	SW846 8081A

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
4,4'-DDT a		4.8 J	7.2	4.0	ug/kg	SW846 8081A
Aluminum		15000	22		mg/kg	SW846 6010C
Arsenic		6.6	2.7		mg/kg	SW846 6010C
Barium		248	1.1		mg/kg	SW846 6010C
Beryllium		1.5	1.1		mg/kg	SW846 6010C
Calcium		10700	44		mg/kg	SW846 6010C
Chromium		11.1	1.1		mg/kg	SW846 6010C
Cobalt		7.4	0.55		mg/kg	SW846 6010C
Copper		26.2	2.2		mg/kg	SW846 6010C
Iron		20200	7.7		mg/kg	SW846 6010C
Lead		36.7	5.5		mg/kg	SW846 6010C
Magnesium		3700	22		mg/kg	SW846 6010C
Manganese		469	0.55		mg/kg	SW846 6010C
Nickel		7.8	3.3		mg/kg	SW846 6010C
Potassium		3320	220		mg/kg	SW846 6010C
Sodium		359	44		mg/kg	SW846 6010C
Thallium		1.4	1.1		mg/kg	SW846 6010C
Vanadium		47.5	1.1		mg/kg	SW846 6010C
Zinc		115	3.3		mg/kg	SW846 6010C
pH		8.07			su	SW846 9045D

D75022-7 BO-SO-07-00-02

alpha-Chlordane a	6.2 J	7.1	3.6	ug/kg	SW846 8081A
gamma-Chlordane a	5.2 J	7.1	3.6	ug/kg	SW846 8081A
Aluminum	16800	21		mg/kg	SW846 6010C
Arsenic	8.1	2.6		mg/kg	SW846 6010C
Barium	253	1.0		mg/kg	SW846 6010C
Beryllium	1.4	1.0		mg/kg	SW846 6010C
Calcium	10300	42		mg/kg	SW846 6010C
Chromium	11.6	1.0		mg/kg	SW846 6010C
Cobalt	7.4	0.52		mg/kg	SW846 6010C
Copper	24.3	2.1		mg/kg	SW846 6010C
Iron	20300	7.3		mg/kg	SW846 6010C
Lead	41.5	5.2		mg/kg	SW846 6010C
Magnesium	4000	21		mg/kg	SW846 6010C
Manganese	490	0.52		mg/kg	SW846 6010C
Mercury	0.13	0.088		mg/kg	SW846 7471B
Nickel	8.0	3.1		mg/kg	SW846 6010C
Potassium	4620	210		mg/kg	SW846 6010C
Sodium	274	42		mg/kg	SW846 6010C
Thallium	1.6	1.0		mg/kg	SW846 6010C
Vanadium	44.1	1.0		mg/kg	SW846 6010C
Zinc	113	3.1		mg/kg	SW846 6010C
pH	7.38			su	SW846 9045D

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D75022-8 BO-SO-08-02-06

alpha-Chlordane ^a	7.6	7.2	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	5.1 J	7.2	3.6	ug/kg	SW846 8081A
4,4' -DDE ^a	3.7 J	7.2	3.6	ug/kg	SW846 8081A
4,4' -DDT ^a	4.2 J	7.2	3.9	ug/kg	SW846 8081A
Aluminum	17600	21		mg/kg	SW846 6010C
Arsenic	12.5	2.6		mg/kg	SW846 6010C
Barium	265	1.0		mg/kg	SW846 6010C
Beryllium	1.3	1.0		mg/kg	SW846 6010C
Calcium	10500	42		mg/kg	SW846 6010C
Chromium	12.8	1.0		mg/kg	SW846 6010C
Cobalt	8.5	0.52		mg/kg	SW846 6010C
Copper	26.1	2.1		mg/kg	SW846 6010C
Iron	22000	7.3		mg/kg	SW846 6010C
Lead	39.7	5.2		mg/kg	SW846 6010C
Magnesium	3970	21		mg/kg	SW846 6010C
Manganese	523	0.52		mg/kg	SW846 6010C
Nickel	8.8	3.1		mg/kg	SW846 6010C
Potassium	4310	210		mg/kg	SW846 6010C
Sodium	280	42		mg/kg	SW846 6010C
Thallium	4.6	1.0		mg/kg	SW846 6010C
Vanadium	48.2	1.0		mg/kg	SW846 6010C
Zinc	120	3.1		mg/kg	SW846 6010C
pH	7.43			su	SW846 9045D

D75022-9 BO-SO-09-06-18

alpha-Chlordane ^a	5.3 J	7.3	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	4.2 J	7.3	3.6	ug/kg	SW846 8081A
Aluminum	15700	20		mg/kg	SW846 6010C
Arsenic	7.9	2.5		mg/kg	SW846 6010C
Barium	258	1.0		mg/kg	SW846 6010C
Beryllium	1.4	1.0		mg/kg	SW846 6010C
Calcium	12900	41		mg/kg	SW846 6010C
Chromium	12.5	1.0		mg/kg	SW846 6010C
Cobalt	8.2	0.51		mg/kg	SW846 6010C
Copper	23.8	2.0		mg/kg	SW846 6010C
Iron	22200	7.1		mg/kg	SW846 6010C
Lead	36.1	5.1		mg/kg	SW846 6010C
Magnesium	4690	20		mg/kg	SW846 6010C
Manganese	550	0.51		mg/kg	SW846 6010C
Nickel	8.2	3.1		mg/kg	SW846 6010C
Potassium	3470	200		mg/kg	SW846 6010C

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						

Sodium	393	41		mg/kg	SW846 6010C
Thallium	4.0	1.0		mg/kg	SW846 6010C
Vanadium	51.6	1.0		mg/kg	SW846 6010C
Zinc	102	3.1		mg/kg	SW846 6010C
pH	8.05			su	SW846 9045D

D75022-10 BO-SO-10-02-06

alpha-Chlordane ^a	11.8	7.3	3.6	ug/kg	SW846 8081A
gamma-Chlordane ^a	9.1	7.3	3.6	ug/kg	SW846 8081A
4,4'-DDD ^a	4.0 J	7.3	3.6	ug/kg	SW846 8081A
4,4'-DDE ^a	5.8 J	7.3	3.6	ug/kg	SW846 8081A
4,4'-DDT ^a	7.0 J	7.3	4.0	ug/kg	SW846 8081A
Dieldrin ^a	5.5 J	7.3	3.6	ug/kg	SW846 8081A
Heptachlor epoxide ^a	3.9 J	7.3	3.6	ug/kg	SW846 8081A
Aluminum	16200	21		mg/kg	SW846 6010C
Arsenic	10.2	2.6		mg/kg	SW846 6010C
Barium	274	1.1		mg/kg	SW846 6010C
Beryllium	1.4	1.1		mg/kg	SW846 6010C
Calcium	10900	42		mg/kg	SW846 6010C
Chromium	13.6	1.1		mg/kg	SW846 6010C
Cobalt	8.4	0.53		mg/kg	SW846 6010C
Copper	29.1	2.1		mg/kg	SW846 6010C
Iron	21800	7.4		mg/kg	SW846 6010C
Lead	40.3	5.3		mg/kg	SW846 6010C
Magnesium	4150	21		mg/kg	SW846 6010C
Manganese	501	0.53		mg/kg	SW846 6010C
Mercury	0.14	0.088		mg/kg	SW846 7471B
Nickel	11.2	3.2		mg/kg	SW846 6010C
Potassium	4240	210		mg/kg	SW846 6010C
Sodium	337	42		mg/kg	SW846 6010C
Thallium	3.8	1.1		mg/kg	SW846 6010C
Vanadium	48.3	1.1		mg/kg	SW846 6010C
Zinc	118	3.2		mg/kg	SW846 6010C
pH	7.37			su	SW846 9045D

D75022-11 BO-SO-11-00-02

Anthracene	147	70	20	ug/kg	SW846 8270C
Benzo(a)anthracene	41.8 J	70	18	ug/kg	SW846 8270C
Benzo(b)fluoranthene	143	70	18	ug/kg	SW846 8270C
Benzo(k)fluoranthene	126	70	18	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	111	70	18	ug/kg	SW846 8270C
Chrysene	57.2 J	70	21	ug/kg	SW846 8270C
bis(2-Ethylhexyl)phthalate	123	70	18	ug/kg	SW846 8270C

Summary of Hits

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Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						

Fluoranthene	197	70	18	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	123 J	140	35	ug/kg	SW846 8270C
Phenanthrene	156	70	21	ug/kg	SW846 8270C
Pyrene	145	70	18	ug/kg	SW846 8270C

D75022-12 BO-SO-12-00-02

Acetone ^b	4.9 J	10	2.3	ug/kg	SW846 8260C
Anthracene	141	68	20	ug/kg	SW846 8270C
Benzo(a)anthracene	41.6 J	68	17	ug/kg	SW846 8270C
Benzo(b)fluoranthene	160	68	17	ug/kg	SW846 8270C
Benzo(k)fluoranthene	126	68	17	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	123	68	17	ug/kg	SW846 8270C
Chrysene	78.2	68	20	ug/kg	SW846 8270C
bis(2-Ethylhexyl)phthalate	70.5	68	17	ug/kg	SW846 8270C
Fluoranthene	199	68	17	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	135 J	140	34	ug/kg	SW846 8270C
Phenanthrene	150	68	20	ug/kg	SW846 8270C
Pyrene	158	68	17	ug/kg	SW846 8270C

D75022-13 BO-SO-13-00-02

Styrene ^b	0.27 J	2.3	0.20	ug/kg	SW846 8260C
Anthracene	67.4 J	75	22	ug/kg	SW846 8270C
Benzo(a)anthracene	65.7 J	75	19	ug/kg	SW846 8270C
Benzo(b)fluoranthene	201	75	19	ug/kg	SW846 8270C
Benzo(k)fluoranthene	56.5 J	75	19	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	127	75	19	ug/kg	SW846 8270C
Chrysene	137	75	23	ug/kg	SW846 8270C
Dibenz(a,h)anthracene	64.2 J	75	19	ug/kg	SW846 8270C
bis(2-Ethylhexyl)phthalate	191	75	19	ug/kg	SW846 8270C
Fluoranthene	219	75	19	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	152	150	38	ug/kg	SW846 8270C
Phenanthrene	108	75	22	ug/kg	SW846 8270C
Pyrene	216	75	19	ug/kg	SW846 8270C

D75022-14 BO-SO-14-00-02

Acetone ^b	3.8 J	10	2.4	ug/kg	SW846 8260C
Acenaphthylene	35.7 J	70	26	ug/kg	SW846 8270C
Anthracene	69.0 J	70	20	ug/kg	SW846 8270C
Benzo(a)anthracene	83.9	70	17	ug/kg	SW846 8270C
Benzo(b)fluoranthene	164	70	17	ug/kg	SW846 8270C
Benzo(k)fluoranthene	45.3 J	70	17	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	105	70	17	ug/kg	SW846 8270C

Summary of Hits

Page 8 of 8

Job Number: D75022
Account: Weston Solutions, Inc.
Project: DUG
Collected: 09/10/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Butyl benzyl phthalate		67.2 J	70	31	ug/kg	SW846 8270C
Chrysene		138	70	21	ug/kg	SW846 8270C
bis(2-Ethylhexyl)phthalate		615	70	17	ug/kg	SW846 8270C
Fluoranthene		230	70	17	ug/kg	SW846 8270C
Fluorene		45.2 J	70	23	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene		131 J	140	35	ug/kg	SW846 8270C
Phenanthrene		128	70	21	ug/kg	SW846 8270C
Pyrene		165	70	17	ug/kg	SW846 8270C

D75022-15 BO-SO-15-00-02

Acenaphthylene	35.4 J	69	26	ug/kg	SW846 8270C
Anthracene	67.9 J	69	20	ug/kg	SW846 8270C
Benzo(a)anthracene	91.1	69	17	ug/kg	SW846 8270C
Benzo(b)fluoranthene	182	69	17	ug/kg	SW846 8270C
Benzo(k)fluoranthene	60.1 J	69	17	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	119	69	17	ug/kg	SW846 8270C
Butyl benzyl phthalate	128	69	31	ug/kg	SW846 8270C
Chrysene	149	69	21	ug/kg	SW846 8270C
Di-n-butyl phthalate	52.4 J	69	17	ug/kg	SW846 8270C
bis(2-Ethylhexyl)phthalate	444	69	17	ug/kg	SW846 8270C
Fluoranthene	244	69	17	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	154	140	35	ug/kg	SW846 8270C
Naphthalene	41.9 J	69	28	ug/kg	SW846 8270C
Phenanthrene	126	69	20	ug/kg	SW846 8270C
Pyrene	178	69	17	ug/kg	SW846 8270C

- (a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.
(b) Analysis performed at Accutest Laboratories, Dayton, NJ.



4

Sample Results

Report of Analysis

Report of Analysis

Page 1 of 1

Client Sample ID:	BO-SO-01-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-1	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.3
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25231.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.3	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.3	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.3	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.3	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.3	3.6	ug/kg	
5103-71-9	alpha-Chlordane	17.8	7.3	3.6	ug/kg	
5103-74-2	gamma-Chlordane	9.4	7.3	3.6	ug/kg	
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.3	3.6	ug/kg	
72-55-9	4,4'-DDE	5.9	7.3	3.6	ug/kg	J
50-29-3	4,4'-DDT	8.4	7.3	4.0	ug/kg	
60-57-1	Dieldrin	ND	7.3	3.6	ug/kg	
72-20-8	Endrin	ND	7.3	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.3	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.3	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.3	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.3	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.3	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.3	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	5.0	7.3	3.6	ug/kg	J
72-43-5	Methoxychlor	ND	7.3	5.5	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	83%		45-156%
877-09-8	Tetrachloro-m-xylene	83%		45-156%
2051-24-3	Decachlorobiphenyl	114%		41-179%
2051-24-3	Decachlorobiphenyl	105%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	BO-SO-01-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-1	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.3
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	13300	11	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Antimony	< 3.2	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Arsenic	8.8	2.7	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Barium	229	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Beryllium	1.3	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Calcium	10600	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Chromium	12.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cobalt	8.3	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Copper	25.9	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Iron	19400	7.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Lead	44.1	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Magnesium	3970	21	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Manganese	453	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Mercury	< 0.086	0.086	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁴
Nickel	10.4	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Potassium	4390	210	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Selenium	< 5.4	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Silver ^a	< 6.4	6.4	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Sodium	284	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Thallium	3.4	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Vanadium	39.9	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Zinc	112	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Prep QC Batch: MP16909

(5) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-01-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-1	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.3
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	91.3		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.50		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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4.2
4**Client Sample ID:** BO-SO-02-02-06**Lab Sample ID:** D75022-2**Matrix:** SO - Soil**Method:** SW846 8081A SW846 3546**Project:** DUG**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 92.7

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	GEH25233.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.2	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.2	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.2	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.2	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.2	3.6	ug/kg	
5103-71-9	alpha-Chlordane	15.6	7.2	3.6	ug/kg	
5103-74-2	gamma-Chlordane	9.6	7.2	3.6	ug/kg	
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.2	3.6	ug/kg	
72-55-9	4,4'-DDE	6.6	7.2	3.6	ug/kg	J
50-29-3	4,4'-DDT	10.6	7.2	4.0	ug/kg	
60-57-1	Dieldrin	5.1	7.2	3.6	ug/kg	J
72-20-8	Endrin	ND	7.2	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.2	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.2	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.2	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.2	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.2	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.2	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	4.4	7.2	3.6	ug/kg	J
72-43-5	Methoxychlor	ND	7.2	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		45-156%
877-09-8	Tetrachloro-m-xylene	77%		45-156%
2051-24-3	Decachlorobiphenyl	99%		41-179%
2051-24-3	Decachlorobiphenyl	99%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: BO-SO-02-02-06**Lab Sample ID:** D75022-2**Matrix:** SO - Soil**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 92.7**Project:** DUG**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	18100	22	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Antimony	< 3.2	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Arsenic	8.7	2.7	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Barium	280	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Beryllium	1.6	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Calcium	11400	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Chromium	12.5	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cobalt	8.9	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Copper	30.7	2.2	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Iron	22100	7.6	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Lead	40.5	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Magnesium	4420	22	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Manganese	547	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Mercury	0.088	0.083	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁴
Nickel	10.4	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Potassium	4300	220	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Selenium	< 5.4	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Silver ^a	< 6.5	6.5	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Sodium	392	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Thallium	3.8	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Vanadium	48.7	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Zinc	126	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Prep QC Batch: MP16909

(5) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-02-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-2	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	92.7
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	92.7		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.47		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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4.3
4

Client Sample ID:	BO-SO-03-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-3	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.1
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25234.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.3	3.7	ug/kg	
319-84-6	alpha-BHC	ND	7.3	3.7	ug/kg	
319-85-7	beta-BHC	ND	7.3	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.3	3.7	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.3	3.7	ug/kg	
5103-71-9	alpha-Chlordane	4.4	7.3	3.7	ug/kg	J
5103-74-2	gamma-Chlordane	ND	7.3	3.7	ug/kg	
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.3	3.7	ug/kg	
72-55-9	4,4'-DDE	ND	7.3	3.7	ug/kg	
50-29-3	4,4'-DDT	4.6	7.3	4.0	ug/kg	J
60-57-1	Dieldrin	9.9	7.3	3.7	ug/kg	
72-20-8	Endrin	ND	7.3	3.7	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.3	3.7	ug/kg	
53494-70-5	Endrin ketone	ND	7.3	3.7	ug/kg	
959-98-8	Endosulfan-I	ND	7.3	3.7	ug/kg	
33213-65-9	Endosulfan-II	ND	7.3	3.7	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.3	3.7	ug/kg	
76-44-8	Heptachlor	ND	7.3	3.7	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.3	3.7	ug/kg	
72-43-5	Methoxychlor	ND	7.3	5.5	ug/kg	
8001-35-2	Toxaphene	ND	370	260	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		45-156%
877-09-8	Tetrachloro-m-xylene	80%		45-156%
2051-24-3	Decachlorobiphenyl	145%		41-179%
2051-24-3	Decachlorobiphenyl	93%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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4.3
4

Client Sample ID:	BO-SO-03-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-3	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.1
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	18200	22	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Antimony	< 3.3	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Arsenic	9.1	2.8	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Barium	275	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Beryllium	1.7	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Calcium	12700	44	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Chromium	13.5	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cobalt	10.4	0.55	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Copper	26.2	2.2	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Iron	23300	7.8	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Lead	34.7	5.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Magnesium	4610	22	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Manganese	561	0.55	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Mercury	0.12	0.089	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁴
Nickel	10.3	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Potassium	3470	220	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Selenium	< 5.5	5.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Silver ^a	< 6.7	6.7	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Sodium	601	44	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Thallium	3.7	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Vanadium	51.0	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵
Zinc	113	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Prep QC Batch: MP16909

(5) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-03-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-3	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.1
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	91.1		%	1	09/14/15	SWT	SM2540G-2011 M
pH	8.13		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-04-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-4	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.7
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25235.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.1	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.1	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.1	3.9	ug/kg	
319-86-8	delta-BHC	ND	7.1	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.1	3.6	ug/kg	
5103-71-9	alpha-Chlordane	9.8	7.1	3.6	ug/kg	
5103-74-2	gamma-Chlordane	6.8	7.1	3.6	ug/kg	J
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.1	3.6	ug/kg	
72-55-9	4,4'-DDE	ND	7.1	3.6	ug/kg	
50-29-3	4,4'-DDT	3.9	7.1	3.9	ug/kg	J
60-57-1	Dieldrin	ND	7.1	3.6	ug/kg	
72-20-8	Endrin	ND	7.1	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.1	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.1	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.1	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.1	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.1	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.1	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.1	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.1	5.3	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		45-156%
877-09-8	Tetrachloro-m-xylene	77%		45-156%
2051-24-3	Decachlorobiphenyl	98%		41-179%
2051-24-3	Decachlorobiphenyl	86%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-04-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-4	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.7
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	20300	21	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Antimony	< 3.2	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Arsenic	9.4	2.6	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Barium	266	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Beryllium	1.4	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Calcium	11700	42	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Chromium	11.2	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cobalt	7.7	0.53	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Copper	24.1	2.1	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Iron	20600	7.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Lead	37.6	5.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Magnesium	4070	21	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Manganese	495	0.53	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Mercury	< 0.083	0.083	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁵
Nickel	8.0	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Potassium	4540	210	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Selenium ^a	< 11	11	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Silver ^a	< 32	32	mg/kg	10	09/15/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Sodium	321	42	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Thallium	< 1.1	1.1	mg/kg	1	09/15/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Vanadium	45.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Zinc	113	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶

- (1) Instrument QC Batch: MA6528
- (2) Instrument QC Batch: MA6536
- (3) Instrument QC Batch: MA6540
- (4) Instrument QC Batch: MA6552
- (5) Prep QC Batch: MP16909
- (6) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-04-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-4	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.7
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	93.7		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.58		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-05-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-5	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	92.3
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25236.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.2	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.2	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.2	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.2	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.2	3.6	ug/kg	
5103-71-9	alpha-Chlordane	5.1	7.2	3.6	ug/kg	J
5103-74-2	gamma-Chlordane	4.0	7.2	3.6	ug/kg	J
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.2	3.6	ug/kg	
72-55-9	4,4'-DDE	ND	7.2	3.6	ug/kg	
50-29-3	4,4'-DDT	5.2	7.2	4.0	ug/kg	J
60-57-1	Dieldrin	ND	7.2	3.6	ug/kg	
72-20-8	Endrin	ND	7.2	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.2	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.2	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.2	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.2	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.2	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.2	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.2	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.2	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	89%		45-156%
877-09-8	Tetrachloro-m-xylene	87%		45-156%
2051-24-3	Decachlorobiphenyl	130%		41-179%
2051-24-3	Decachlorobiphenyl	99%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: BO-SO-05-02-06**Lab Sample ID:** D75022-5**Matrix:** SO - Soil**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 92.3**Project:** DUG**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	14600	21	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Antimony	< 3.2	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Arsenic	6.3	2.7	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Barium	290	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Beryllium	1.3	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Calcium	10900	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Chromium	10.6	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cobalt	7.1	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Copper	24.1	2.1	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Iron	19200	7.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Lead	34.7	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Magnesium	3800	21	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Manganese	437	0.54	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Mercury	< 0.087	0.087	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁵
Nickel	8.8	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Potassium	4070	210	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Selenium	< 5.4	5.4	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Silver ^a	< 6.4	6.4	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Sodium	419	43	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Thallium	1.4	1.1	mg/kg	1	09/15/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Vanadium	43.4	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Zinc	111	3.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Instrument QC Batch: MA6552

(5) Prep QC Batch: MP16909

(6) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-05-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-5	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	92.3
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	92.3		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.54		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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4.6
4

Client Sample ID:	BO-SO-06-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-6	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	92.0
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25237.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.2	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.2	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.2	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.2	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.2	3.6	ug/kg	
5103-71-9	alpha-Chlordane	11.0	7.2	3.6	ug/kg	
5103-74-2	gamma-Chlordane	9.6	7.2	3.6	ug/kg	
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.2	3.6	ug/kg	
72-55-9	4,4'-DDE	ND	7.2	3.6	ug/kg	
50-29-3	4,4'-DDT	4.8	7.2	4.0	ug/kg	J
60-57-1	Dieldrin	ND	7.2	3.6	ug/kg	
72-20-8	Endrin	ND	7.2	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.2	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.2	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.2	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.2	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.2	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.2	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.2	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.2	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%		45-156%
877-09-8	Tetrachloro-m-xylene	84%		45-156%
2051-24-3	Decachlorobiphenyl	101%		41-179%
2051-24-3	Decachlorobiphenyl	86%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BO-SO-06-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-6	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	92.0
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	15000	22	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Antimony	< 3.3	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Arsenic	6.6	2.7	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Barium	248	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Beryllium	1.5	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cadmium	< 1.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Calcium	10700	44	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Chromium	11.1	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cobalt	7.4	0.55	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Copper	26.2	2.2	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Iron	20200	7.7	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Lead	36.7	5.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Magnesium	3700	22	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Manganese	469	0.55	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Mercury	< 0.085	0.085	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁵
Nickel	7.8	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Potassium	3320	220	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Selenium	< 5.5	5.5	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Silver ^a	< 6.6	6.6	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Sodium	359	44	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Thallium	1.4	1.1	mg/kg	1	09/15/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Vanadium	47.5	1.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Zinc	115	3.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶

- (1) Instrument QC Batch: MA6528
- (2) Instrument QC Batch: MA6536
- (3) Instrument QC Batch: MA6540
- (4) Instrument QC Batch: MA6552
- (5) Prep QC Batch: MP16909
- (6) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-06-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-6	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	92.0
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	92		%	1	09/14/15	SWT	SM2540G-2011 M
pH	8.07		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-07-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-7	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.5
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25238.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.1	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.1	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.1	3.9	ug/kg	
319-86-8	delta-BHC	ND	7.1	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.1	3.6	ug/kg	
5103-71-9	alpha-Chlordane	6.2	7.1	3.6	ug/kg	J
5103-74-2	gamma-Chlordane	5.2	7.1	3.6	ug/kg	J
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.1	3.6	ug/kg	
72-55-9	4,4'-DDE	ND	7.1	3.6	ug/kg	
50-29-3	4,4'-DDT	ND	7.1	3.9	ug/kg	
60-57-1	Dieldrin	ND	7.1	3.6	ug/kg	
72-20-8	Endrin	ND	7.1	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.1	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.1	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.1	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.1	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.1	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.1	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.1	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.1	5.3	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		45-156%
877-09-8	Tetrachloro-m-xylene	77%		45-156%
2051-24-3	Decachlorobiphenyl	102%		41-179%
2051-24-3	Decachlorobiphenyl	91%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-07-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-7	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.5
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	16800	21	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Antimony	< 3.1	3.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Arsenic	8.1	2.6	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Barium	253	1.0	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Beryllium	1.4	1.0	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cadmium	< 1.0	1.0	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Calcium	10300	42	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Chromium	11.6	1.0	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cobalt	7.4	0.52	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Copper	24.3	2.1	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Iron	20300	7.3	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Lead	41.5	5.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Magnesium	4000	21	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Manganese	490	0.52	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Mercury	0.13	0.088	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁵
Nickel	8.0	3.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Potassium	4620	210	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Selenium	< 5.2	5.2	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Silver ^a	< 6.2	6.2	mg/kg	2	09/15/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Sodium	274	42	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Thallium	1.6	1.0	mg/kg	1	09/15/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Vanadium	44.1	1.0	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶
Zinc	113	3.1	mg/kg	1	09/15/15	09/17/15 LH	SW846 6010C ²	SW846 3050B ⁶

- (1) Instrument QC Batch: MA6528
- (2) Instrument QC Batch: MA6536
- (3) Instrument QC Batch: MA6540
- (4) Instrument QC Batch: MA6552
- (5) Prep QC Batch: MP16909
- (6) Prep QC Batch: MP16910

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-07-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-7	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.5
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	93.5		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.38		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-08-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-8	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.0
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25239.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.2	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.2	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.2	3.9	ug/kg	
319-86-8	delta-BHC	ND	7.2	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.2	3.6	ug/kg	
5103-71-9	alpha-Chlordane	7.6	7.2	3.6	ug/kg	
5103-74-2	gamma-Chlordane	5.1	7.2	3.6	ug/kg	J
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.2	3.6	ug/kg	
72-55-9	4,4'-DDE	3.7	7.2	3.6	ug/kg	J
50-29-3	4,4'-DDT	4.2	7.2	3.9	ug/kg	J
60-57-1	Dieldrin	ND	7.2	3.6	ug/kg	
72-20-8	Endrin	ND	7.2	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.2	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.2	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.2	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.2	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.2	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.2	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.2	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.2	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		45-156%
877-09-8	Tetrachloro-m-xylene	88%		45-156%
2051-24-3	Decachlorobiphenyl	114%		41-179%
2051-24-3	Decachlorobiphenyl	103%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-08-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-8	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.0
Project:	DUG		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	17600	21	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Antimony	< 3.1	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Arsenic	12.5	2.6	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Barium	265	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Beryllium	1.3	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cadmium	< 1.0	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Calcium	10500	42	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Chromium	12.8	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Cobalt	8.5	0.52	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Copper	26.1	2.1	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁶
Iron	22000	7.3	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Lead	39.7	5.2	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Magnesium	3970	21	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Manganese	523	0.52	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Mercury	< 0.084	0.084	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁵
Nickel	8.8	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Potassium	4310	210	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Selenium	< 5.2	5.2	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Silver ^a	< 31	31	mg/kg	10	09/16/15	09/21/15 JB	SW846 6010C ⁴	SW846 3050B ⁶
Sodium	280	42	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Thallium	4.6	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Vanadium	48.2	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶
Zinc	120	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁶

- (1) Instrument QC Batch: MA6528
- (2) Instrument QC Batch: MA6536
- (3) Instrument QC Batch: MA6540
- (4) Instrument QC Batch: MA6552
- (5) Prep QC Batch: MP16909
- (6) Prep QC Batch: MP16935

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-08-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-8	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	93.0
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	93		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.43		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-09-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-9	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.9
Method:	SW846 8081A SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25240.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.3	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.3	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.3	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.3	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.3	3.6	ug/kg	
5103-71-9	alpha-Chlordane	5.3	7.3	3.6	ug/kg	J
5103-74-2	gamma-Chlordane	4.2	7.3	3.6	ug/kg	J
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	ND	7.3	3.6	ug/kg	
72-55-9	4,4'-DDE	ND	7.3	3.6	ug/kg	
50-29-3	4,4'-DDT	ND	7.3	4.0	ug/kg	
60-57-1	Dieldrin	ND	7.3	3.6	ug/kg	
72-20-8	Endrin	ND	7.3	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.3	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.3	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.3	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.3	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.3	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.3	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	7.3	3.6	ug/kg	
72-43-5	Methoxychlor	ND	7.3	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	91%		45-156%
877-09-8	Tetrachloro-m-xylene	89%		45-156%
2051-24-3	Decachlorobiphenyl	107%		41-179%
2051-24-3	Decachlorobiphenyl	100%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: BO-SO-09-06-18**Lab Sample ID:** D75022-9**Matrix:** SO - Soil**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 91.9**Project:** DUG**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	15700	20	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Antimony	< 3.1	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Arsenic	7.9	2.5	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Barium	258	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Beryllium	1.4	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cadmium	< 1.0	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Calcium	12900	41	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Chromium	12.5	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cobalt	8.2	0.51	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Copper	23.8	2.0	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Iron	22200	7.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Lead	36.1	5.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Magnesium	4690	20	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Manganese	550	0.51	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Mercury	< 0.084	0.084	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁴
Nickel	8.2	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Potassium	3470	200	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Selenium	< 5.1	5.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Silver ^a	< 6.1	6.1	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Sodium	393	41	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Thallium	4.0	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Vanadium	51.6	1.0	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Zinc	102	3.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Prep QC Batch: MP16909

(5) Prep QC Batch: MP16935

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	BO-SO-09-06-18	Date Sampled:	09/10/15
Lab Sample ID:	D75022-9	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.9
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	91.9		%	1	09/14/15	SWT	SM2540G-2011 M
pH	8.05		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

Report of Analysis

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Client Sample ID: BO-SO-10-02-06**Lab Sample ID:** D75022-10**Matrix:** SO - Soil**Method:** SW846 8081A SW846 3546**Project:** DUG**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 91.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GEH25241.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	7.3	3.6	ug/kg	
319-84-6	alpha-BHC	ND	7.3	3.6	ug/kg	
319-85-7	beta-BHC	ND	7.3	4.0	ug/kg	
319-86-8	delta-BHC	ND	7.3	3.6	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	7.3	3.6	ug/kg	
5103-71-9	alpha-Chlordane	11.8	7.3	3.6	ug/kg	
5103-74-2	gamma-Chlordane	9.1	7.3	3.6	ug/kg	
12789-03-6	Chlordane	ND	180	110	ug/kg	
72-54-8	4,4'-DDD	4.0	7.3	3.6	ug/kg	J
72-55-9	4,4'-DDE	5.8	7.3	3.6	ug/kg	J
50-29-3	4,4'-DDT	7.0	7.3	4.0	ug/kg	J
60-57-1	Dieldrin	5.5	7.3	3.6	ug/kg	J
72-20-8	Endrin	ND	7.3	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.3	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	7.3	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	7.3	3.6	ug/kg	
33213-65-9	Endosulfan-II	ND	7.3	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.3	3.6	ug/kg	
76-44-8	Heptachlor	ND	7.3	3.6	ug/kg	
1024-57-3	Heptachlor epoxide	3.9	7.3	3.6	ug/kg	J
72-43-5	Methoxychlor	ND	7.3	5.4	ug/kg	
8001-35-2	Toxaphene	ND	360	250	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		45-156%
877-09-8	Tetrachloro-m-xylene	80%		45-156%
2051-24-3	Decachlorobiphenyl	111%		41-179%
2051-24-3	Decachlorobiphenyl	88%		41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.10
4

Report of Analysis

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Client Sample ID: BO-SO-10-02-06**Lab Sample ID:** D75022-10**Matrix:** SO - Soil**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 91.5**Project:** DUG**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	16200	21	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Antimony	< 3.2	3.2	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Arsenic	10.2	2.6	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Barium	274	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Beryllium	1.4	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cadmium	< 1.1	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Calcium	10900	42	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Chromium	13.6	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Cobalt	8.4	0.53	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Copper	29.1	2.1	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Iron	21800	7.4	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Lead	40.3	5.3	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Magnesium	4150	21	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Manganese	501	0.53	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Mercury	0.14	0.088	mg/kg	1	09/14/15	09/15/15 LH	SW846 7471B ¹	SW846 7471B ⁴
Nickel	11.2	3.2	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Potassium	4240	210	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Selenium	< 5.3	5.3	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Silver ^a	< 6.3	6.3	mg/kg	2	09/16/15	09/17/15 LH	SW846 6010C ³	SW846 3050B ⁵
Sodium	337	42	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Thallium	3.8	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Vanadium	48.3	1.1	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵
Zinc	118	3.2	mg/kg	1	09/16/15	09/16/15 LH	SW846 6010C ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA6528

(2) Instrument QC Batch: MA6536

(3) Instrument QC Batch: MA6540

(4) Prep QC Batch: MP16909

(5) Prep QC Batch: MP16935

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

4.10
4

Report of Analysis

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Client Sample ID:	BO-SO-10-02-06	Date Sampled:	09/10/15
Lab Sample ID:	D75022-10	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	91.5
Project:	DUG		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	91.5		%	1	09/14/15	SWT	SM2540G-2011 M
pH	7.37		su	1	09/14/15 08:30	TB	SW846 9045D

RL = Reporting Limit

4.10

4

Report of Analysis

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Client Sample ID: BO-SO-11-00-02
Lab Sample ID: D75022-11
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 94.7

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	3C123206.D	1	09/15/15	ANJ	n/a	n/a	N:V3C5628

Initial Weight	
Run #1	4.8 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	11	2.5	ug/kg	
71-43-2	Benzene	ND	0.55	0.15	ug/kg	
75-27-4	Bromodichloromethane	ND	2.2	0.17	ug/kg	
75-25-2	Bromoform	ND	5.5	0.26	ug/kg	
74-83-9	Bromomethane	ND	5.5	0.40	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	2.1	ug/kg	
75-15-0	Carbon disulfide	ND	2.2	0.25	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.2	0.25	ug/kg	
108-90-7	Chlorobenzene	ND	2.2	0.17	ug/kg	
75-00-3	Chloroethane	ND	5.5	0.53	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	27	1.2	ug/kg	
67-66-3	Chloroform	ND	2.2	0.16	ug/kg	
74-87-3	Chloromethane	ND	5.5	0.29	ug/kg	
124-48-1	Dibromochloromethane	ND	2.2	0.23	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.13	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.17	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.25	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.16	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.15	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.65	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.86	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.65	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.2	0.26	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.2	0.13	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	0.19	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.18	ug/kg	
591-78-6	2-Hexanone	ND	5.5	1.5	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.5	0.50	ug/kg	
75-09-2	Methylene chloride	ND	5.5	1.1	ug/kg	
100-42-5	Styrene	ND	2.2	0.20	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	0.19	ug/kg	
127-18-4	Tetrachloroethene	ND	2.2	0.33	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.11
4

Report of Analysis

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Client Sample ID:	BO-SO-11-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-11	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	94.7
Method:	SW846 8260C		
Project:	DUG		

CAS No.	Compound	Result	RL	MDL	Units	Q
108-88-3	Toluene	ND	1.1	0.23	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.2	0.16	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.2	0.16	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.16	ug/kg	
108-05-4	Vinyl Acetate	ND	11	1.9	ug/kg	
75-01-4	Vinyl chloride	ND	2.2	0.22	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.30	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		70-122%
17060-07-0	1,2-Dichloroethane-D4	108%		68-124%
2037-26-5	Toluene-D8	100%		77-125%
460-00-4	4-Bromofluorobenzene	92%		72-130%

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 3

Client Sample ID:	BO-SO-11-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-11	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	94.7
Method:	SW846 8270C SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G125885.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	700	530	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	70	20	ug/kg	
95-57-8	2-Chlorophenol	ND	70	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	70	25	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	70	21	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	350	180	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	700	530	ug/kg	
95-48-7	2-Methylphenol	ND	70	27	ug/kg	
106-44-5	4-Methylphenol	ND	70	28	ug/kg	
88-75-5	2-Nitrophenol	ND	180	70	ug/kg	
100-02-7	4-Nitrophenol	ND	350	250	ug/kg	
87-86-5	Pentachlorophenol	ND	350	180	ug/kg	
108-95-2	Phenol	ND	70	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	70	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	70	24	ug/kg	
83-32-9	Acenaphthene	ND	70	27	ug/kg	
208-96-8	Acenaphthylene	ND	70	27	ug/kg	
120-12-7	Anthracene	147	70	20	ug/kg	
56-55-3	Benzo(a)anthracene	41.8	70	18	ug/kg	J
205-99-2	Benzo(b)fluoranthene	143	70	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	126	70	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	111	70	18	ug/kg	
50-32-8	Benzo(a)pyrene	ND	70	18	ug/kg	
100-51-6	Benzyl Alcohol	ND	70	26	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	70	25	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	70	31	ug/kg	
106-47-8	4-Chloroaniline	ND	70	35	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	70	27	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	70	33	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	70	30	ug/kg	
91-58-7	2-Chloronaphthalene	ND	70	23	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	70	26	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.11
4

Report of Analysis

Client Sample ID:	BO-SO-11-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-11	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	94.7
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	57.2	70	21	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	70	18	ug/kg	
132-64-9	Dibenzofuran	ND	70	26	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	70	18	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	70	32	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	70	29	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	70	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	180	18	ug/kg	
84-66-2	Diethyl phthalate	ND	70	19	ug/kg	
131-11-3	Dimethyl phthalate	ND	70	21	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	70	18	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	70	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	70	32	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	123	70	18	ug/kg	
206-44-0	Fluoranthene	197	70	18	ug/kg	
86-73-7	Fluorene	ND	70	23	ug/kg	
118-74-1	Hexachlorobenzene	ND	70	26	ug/kg	
87-68-3	Hexachlorobutadiene	ND	70	30	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	70	24	ug/kg	
67-72-1	Hexachloroethane	ND	70	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	123	140	35	ug/kg	J
78-59-1	Isophorone	ND	70	27	ug/kg	
91-57-6	2-Methylnaphthalene	ND	70	27	ug/kg	
91-20-3	Naphthalene	ND	70	29	ug/kg	
88-74-4	2-Nitroaniline	ND	140	21	ug/kg	
99-09-2	3-Nitroaniline	ND	180	110	ug/kg	
100-01-6	4-Nitroaniline	ND	70	18	ug/kg	
98-95-3	Nitrobenzene	ND	70	32	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	70	26	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	70	25	ug/kg	
85-01-8	Phenanthrene	156	70	21	ug/kg	
129-00-0	Pyrene	145	70	18	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	70	26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	55%		30-130%
367-12-4	2-Fluorophenol	49%		16-130%
4165-60-0	Nitrobenzene-d5	57%		19-130%
4165-62-2	Phenol-d5	43%		18-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.11
4

Report of Analysis

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Client Sample ID:	BO-SO-11-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-11	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	94.7
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	73%		40-130%
118-79-6	2,4,6-Tribromophenol	56%		17-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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4.12
4

Client Sample ID: BO-SO-12-00-02
Lab Sample ID: D75022-12
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 97.6

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	3C123207.D	1	09/15/15	ANJ	n/a	n/a	N:V3C5628

Initial Weight	
Run #1	4.9 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	4.9	10	2.3	ug/kg	J
71-43-2	Benzene	ND	0.52	0.14	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.16	ug/kg	
75-25-2	Bromoform	ND	5.2	0.25	ug/kg	
74-83-9	Bromomethane	ND	5.2	0.38	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	2.0	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.24	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.24	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.16	ug/kg	
75-00-3	Chloroethane	ND	5.2	0.50	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	26	1.2	ug/kg	
67-66-3	Chloroform	ND	2.1	0.16	ug/kg	
74-87-3	Chloromethane	ND	5.2	0.27	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.21	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.13	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.16	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.24	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.15	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.62	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.81	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.62	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.25	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.12	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.19	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.17	ug/kg	
591-78-6	2-Hexanone	ND	5.2	1.4	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.2	0.48	ug/kg	
75-09-2	Methylene chloride	ND	5.2	1.0	ug/kg	
100-42-5	Styrene	ND	2.1	0.19	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.18	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.31	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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4.12
4

Client Sample ID: BO-SO-12-00-02
Lab Sample ID: D75022-12
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 97.6

CAS No.	Compound	Result	RL	MDL	Units	Q
108-88-3	Toluene	ND	1.0	0.22	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.16	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.15	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.15	ug/kg	
108-05-4	Vinyl Acetate	ND	10	1.9	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.21	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.29	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		70-122%
17060-07-0	1,2-Dichloroethane-D4	112%		68-124%
2037-26-5	Toluene-D8	99%		77-125%
460-00-4	4-Bromofluorobenzene	93%		72-130%

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-12-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-12	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	97.6
Method:	SW846 8270C SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G125945.D	1	09/21/15	DC	09/14/15	OP12354	E1G1652
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	680	510	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	68	19	ug/kg	
95-57-8	2-Chlorophenol	ND	68	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	68	25	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	68	20	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	340	170	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	680	510	ug/kg	
95-48-7	2-Methylphenol	ND	68	26	ug/kg	
106-44-5	4-Methylphenol	ND	68	27	ug/kg	
88-75-5	2-Nitrophenol	ND	170	68	ug/kg	
100-02-7	4-Nitrophenol	ND	340	240	ug/kg	
87-86-5	Pentachlorophenol	ND	340	170	ug/kg	
108-95-2	Phenol	ND	68	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	68	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	68	23	ug/kg	
83-32-9	Acenaphthene	ND	68	26	ug/kg	
208-96-8	Acenaphthylene	ND	68	26	ug/kg	
120-12-7	Anthracene	141	68	20	ug/kg	
56-55-3	Benzo(a)anthracene	41.6	68	17	ug/kg	J
205-99-2	Benzo(b)fluoranthene	160	68	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	126	68	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	123	68	17	ug/kg	
50-32-8	Benzo(a)pyrene	ND	68	17	ug/kg	
100-51-6	Benzyl Alcohol	ND	68	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	68	24	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	68	30	ug/kg	
106-47-8	4-Chloroaniline	ND	68	34	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	68	26	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	68	32	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	68	29	ug/kg	
91-58-7	2-Chloronaphthalene	ND	68	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	68	25	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis4.12
4

Client Sample ID:	BO-SO-12-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-12	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	97.6
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	78.2	68	20	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	68	17	ug/kg	
132-64-9	Dibenzofuran	ND	68	25	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	68	17	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	68	31	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	68	28	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	68	26	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	17	ug/kg	
84-66-2	Diethyl phthalate	ND	68	19	ug/kg	
131-11-3	Dimethyl phthalate	ND	68	20	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	68	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	68	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	68	31	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	70.5	68	17	ug/kg	
206-44-0	Fluoranthene	199	68	17	ug/kg	
86-73-7	Fluorene	ND	68	22	ug/kg	
118-74-1	Hexachlorobenzene	ND	68	25	ug/kg	
87-68-3	Hexachlorobutadiene	ND	68	29	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	68	23	ug/kg	
67-72-1	Hexachloroethane	ND	68	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	135	140	34	ug/kg	J
78-59-1	Isophorone	ND	68	27	ug/kg	
91-57-6	2-Methylnaphthalene	ND	68	27	ug/kg	
91-20-3	Naphthalene	ND	68	28	ug/kg	
88-74-4	2-Nitroaniline	ND	140	20	ug/kg	
99-09-2	3-Nitroaniline	ND	170	100	ug/kg	
100-01-6	4-Nitroaniline	ND	68	17	ug/kg	
98-95-3	Nitrobenzene	ND	68	31	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	68	25	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	68	24	ug/kg	
85-01-8	Phenanthrene	150	68	20	ug/kg	
129-00-0	Pyrene	158	68	17	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	68	25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	55%		30-130%
367-12-4	2-Fluorophenol	46%		16-130%
4165-60-0	Nitrobenzene-d5	54%		19-130%
4165-62-2	Phenol-d5	39%		18-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-12-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-12	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	97.6
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	77%		40-130%
118-79-6	2,4,6-Tribromophenol	60%		17-130%

4.12
4

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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4.13

4

Client Sample ID: BO-SO-13-00-02**Lab Sample ID:** D75022-13**Matrix:** SO - Soil**Method:** SW846 8260C**Project:** DUG**Date Sampled:** 09/10/15**Date Received:** 09/10/15**Percent Solids:** 88.8

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	3C123208.D	1	09/15/15	ANJ	n/a	n/a	N:V3C5628

Initial Weight

Run #1 4.9 g

Run #2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	11	2.6	ug/kg	
71-43-2	Benzene	ND	0.57	0.15	ug/kg	
75-27-4	Bromodichloromethane	ND	2.3	0.18	ug/kg	
75-25-2	Bromoform	ND	5.7	0.27	ug/kg	
74-83-9	Bromomethane	ND	5.7	0.42	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	2.2	ug/kg	
75-15-0	Carbon disulfide	ND	2.3	0.26	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.3	0.26	ug/kg	
108-90-7	Chlorobenzene	ND	2.3	0.18	ug/kg	
75-00-3	Chloroethane	ND	5.7	0.55	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	29	1.3	ug/kg	
67-66-3	Chloroform	ND	2.3	0.17	ug/kg	
74-87-3	Chloromethane	ND	5.7	0.30	ug/kg	
124-48-1	Dibromochloromethane	ND	2.3	0.24	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.14	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.18	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.26	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.16	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.15	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.68	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.90	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.68	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.3	0.27	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.3	0.14	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.3	0.20	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.19	ug/kg	
591-78-6	2-Hexanone	ND	5.7	1.5	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.7	0.53	ug/kg	
75-09-2	Methylene chloride	ND	5.7	1.1	ug/kg	
100-42-5	Styrene	0.27	2.3	0.20	ug/kg	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.3	0.20	ug/kg	
127-18-4	Tetrachloroethene	ND	2.3	0.35	ug/kg	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: BO-SO-13-00-02
Lab Sample ID: D75022-13
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 88.8

CAS No.	Compound	Result	RL	MDL	Units	Q
108-88-3	Toluene	ND	1.1	0.24	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.3	0.17	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.3	0.17	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.17	ug/kg	
108-05-4	Vinyl Acetate	ND	11	2.0	ug/kg	
75-01-4	Vinyl chloride	ND	2.3	0.23	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.31	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		70-122%
17060-07-0	1,2-Dichloroethane-D4	115%		68-124%
2037-26-5	Toluene-D8	100%		77-125%
460-00-4	4-Bromofluorobenzene	96%		72-130%

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-13-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-13	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	88.8
Method:	SW846 8270C SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G126003.D	1	09/23/15	DC	09/14/15	OP12354	E1G1654
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	750	560	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	75	21	ug/kg	
95-57-8	2-Chlorophenol	ND	75	27	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	75	27	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	75	23	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	190	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	750	560	ug/kg	
95-48-7	2-Methylphenol	ND	75	29	ug/kg	
106-44-5	4-Methylphenol	ND	75	30	ug/kg	
88-75-5	2-Nitrophenol	ND	190	75	ug/kg	
100-02-7	4-Nitrophenol	ND	380	260	ug/kg	
87-86-5	Pentachlorophenol	ND	380	190	ug/kg	
108-95-2	Phenol	ND	75	30	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	75	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	75	26	ug/kg	
83-32-9	Acenaphthene	ND	75	29	ug/kg	
208-96-8	Acenaphthylene	ND	75	29	ug/kg	
120-12-7	Anthracene	67.4	75	22	ug/kg	J
56-55-3	Benzo(a)anthracene	65.7	75	19	ug/kg	J
205-99-2	Benzo(b)fluoranthene	201	75	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	56.5	75	19	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	127	75	19	ug/kg	
50-32-8	Benzo(a)pyrene	ND	75	19	ug/kg	
100-51-6	Benzyl Alcohol	ND	75	27	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	75	27	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	75	33	ug/kg	
106-47-8	4-Chloroaniline	ND	75	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	75	29	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	75	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	75	32	ug/kg	
91-58-7	2-Chloronaphthalene	ND	75	24	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	75	28	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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4

Client Sample ID:	BO-SO-13-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-13	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	88.8
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	137	75	23	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	64.2	75	19	ug/kg	J
132-64-9	Dibenzofuran	ND	75	28	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	75	19	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	75	34	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	75	31	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	75	29	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	190	19	ug/kg	
84-66-2	Diethyl phthalate	ND	75	21	ug/kg	
131-11-3	Dimethyl phthalate	ND	75	22	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	75	19	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	75	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	75	35	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	191	75	19	ug/kg	
206-44-0	Fluoranthene	219	75	19	ug/kg	
86-73-7	Fluorene	ND	75	25	ug/kg	
118-74-1	Hexachlorobenzene	ND	75	27	ug/kg	
87-68-3	Hexachlorobutadiene	ND	75	32	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	75	26	ug/kg	
67-72-1	Hexachloroethane	ND	75	32	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	152	150	38	ug/kg	
78-59-1	Isophorone	ND	75	29	ug/kg	
91-57-6	2-Methylnaphthalene	ND	75	29	ug/kg	
91-20-3	Naphthalene	ND	75	31	ug/kg	
88-74-4	2-Nitroaniline	ND	150	23	ug/kg	
99-09-2	3-Nitroaniline	ND	190	110	ug/kg	
100-01-6	4-Nitroaniline	ND	75	19	ug/kg	
98-95-3	Nitrobenzene	ND	75	35	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	75	28	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	75	26	ug/kg	
85-01-8	Phenanthrene	108	75	22	ug/kg	
129-00-0	Pyrene	216	75	19	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	75	28	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	92%		30-130%
367-12-4	2-Fluorophenol	70%		16-130%
4165-60-0	Nitrobenzene-d5	92%		19-130%
4165-62-2	Phenol-d5	76%		18-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-13-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-13	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	88.8
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	94%		40-130%
118-79-6	2,4,6-Tribromophenol	91%		17-130%

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ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: BO-SO-14-00-02
Lab Sample ID: D75022-14
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 95.3

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	3C123209.D	1	09/15/15	ANJ	n/a	n/a	N:V3C5628
Run #2							

Initial Weight	
Run #1	5.0 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	3.8	10	2.4	ug/kg	J
71-43-2	Benzene	ND	0.52	0.14	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.16	ug/kg	
75-25-2	Bromoform	ND	5.2	0.25	ug/kg	
74-83-9	Bromomethane	ND	5.2	0.38	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	2.0	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.24	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.24	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.16	ug/kg	
75-00-3	Chloroethane	ND	5.2	0.50	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	26	1.2	ug/kg	
67-66-3	Chloroform	ND	2.1	0.16	ug/kg	
74-87-3	Chloromethane	ND	5.2	0.27	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.22	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.13	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.16	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.24	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.15	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.62	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.82	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.62	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.25	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.12	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.19	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.17	ug/kg	
591-78-6	2-Hexanone	ND	5.2	1.4	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.2	0.48	ug/kg	
75-09-2	Methylene chloride	ND	5.2	1.0	ug/kg	
100-42-5	Styrene	ND	2.1	0.19	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.18	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.32	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

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Report of Analysis

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Client Sample ID:	BO-SO-14-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-14	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	95.3
Method:	SW846 8260C		
Project:	DUG		

CAS No.	Compound	Result	RL	MDL	Units	Q
108-88-3	Toluene	ND	1.0	0.22	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.16	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.15	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.15	ug/kg	
108-05-4	Vinyl Acetate	ND	10	1.9	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.21	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.29	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		70-122%
17060-07-0	1,2-Dichloroethane-D4	113%		68-124%
2037-26-5	Toluene-D8	98%		77-125%
460-00-4	4-Bromofluorobenzene	96%		72-130%

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-14-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-14	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	95.3
Method:	SW846 8270C SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G126004.D	1	09/23/15	DC	09/14/15	OP12354	E1G1654
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	700	520	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	70	20	ug/kg	
95-57-8	2-Chlorophenol	ND	70	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	70	25	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	70	21	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	350	170	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	700	520	ug/kg	
95-48-7	2-Methylphenol	ND	70	26	ug/kg	
106-44-5	4-Methylphenol	ND	70	28	ug/kg	
88-75-5	2-Nitrophenol	ND	170	70	ug/kg	
100-02-7	4-Nitrophenol	ND	350	240	ug/kg	
87-86-5	Pentachlorophenol	ND	350	170	ug/kg	
108-95-2	Phenol	ND	70	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	70	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	70	24	ug/kg	
83-32-9	Acenaphthene	ND	70	26	ug/kg	
208-96-8	Acenaphthylene	35.7	70	26	ug/kg	J
120-12-7	Anthracene	69.0	70	20	ug/kg	J
56-55-3	Benzo(a)anthracene	83.9	70	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	164	70	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	45.3	70	17	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	105	70	17	ug/kg	
50-32-8	Benzo(a)pyrene	ND	70	17	ug/kg	
100-51-6	Benzyl Alcohol	ND	70	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	70	25	ug/kg	
85-68-7	Butyl benzyl phthalate	67.2	70	31	ug/kg	J
106-47-8	4-Chloroaniline	ND	70	35	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	70	27	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	70	33	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	70	29	ug/kg	
91-58-7	2-Chloronaphthalene	ND	70	23	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	70	26	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	BO-SO-14-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-14	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	95.3
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	138	70	21	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	70	17	ug/kg	
132-64-9	Dibenzofuran	ND	70	26	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	70	17	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	70	31	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	70	29	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	70	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	17	ug/kg	
84-66-2	Diethyl phthalate	ND	70	19	ug/kg	
131-11-3	Dimethyl phthalate	ND	70	21	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	70	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	70	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	70	32	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	615	70	17	ug/kg	
206-44-0	Fluoranthene	230	70	17	ug/kg	
86-73-7	Fluorene	45.2	70	23	ug/kg	J
118-74-1	Hexachlorobenzene	ND	70	25	ug/kg	
87-68-3	Hexachlorobutadiene	ND	70	30	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	70	24	ug/kg	
67-72-1	Hexachloroethane	ND	70	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	131	140	35	ug/kg	J
78-59-1	Isophorone	ND	70	27	ug/kg	
91-57-6	2-Methylnaphthalene	ND	70	27	ug/kg	
91-20-3	Naphthalene	ND	70	29	ug/kg	
88-74-4	2-Nitroaniline	ND	140	21	ug/kg	
99-09-2	3-Nitroaniline	ND	170	100	ug/kg	
100-01-6	4-Nitroaniline	ND	70	17	ug/kg	
98-95-3	Nitrobenzene	ND	70	32	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	70	26	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	70	24	ug/kg	
85-01-8	Phenanthrene	128	70	21	ug/kg	
129-00-0	Pyrene	165	70	17	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	70	26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	46%		30-130%
367-12-4	2-Fluorophenol	29%		16-130%
4165-60-0	Nitrobenzene-d5	44%		19-130%
4165-62-2	Phenol-d5	34%		18-130%

ND = Not detected MDL = Method Detection Limit

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RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	BO-SO-14-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-14	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	95.3
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	53%		40-130%
118-79-6	2,4,6-Tribromophenol	48%		17-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: BO-SO-15-00-02
Lab Sample ID: D75022-15
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 96.5

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	3C123210.D	1	09/15/15	ANJ	n/a	n/a	N:V3C5628

Initial Weight	
Run #1	4.7 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	11	2.5	ug/kg	
71-43-2	Benzene	ND	0.55	0.15	ug/kg	
75-27-4	Bromodichloromethane	ND	2.2	0.17	ug/kg	
75-25-2	Bromoform	ND	5.5	0.26	ug/kg	
74-83-9	Bromomethane	ND	5.5	0.40	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	2.1	ug/kg	
75-15-0	Carbon disulfide	ND	2.2	0.25	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.2	0.25	ug/kg	
108-90-7	Chlorobenzene	ND	2.2	0.17	ug/kg	
75-00-3	Chloroethane	ND	5.5	0.53	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	28	1.2	ug/kg	
67-66-3	Chloroform	ND	2.2	0.16	ug/kg	
74-87-3	Chloromethane	ND	5.5	0.29	ug/kg	
124-48-1	Dibromochloromethane	ND	2.2	0.23	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.13	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.17	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.25	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.16	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.15	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.65	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.86	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.65	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.2	0.26	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.2	0.13	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	0.20	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.18	ug/kg	
591-78-6	2-Hexanone	ND	5.5	1.5	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.5	0.51	ug/kg	
75-09-2	Methylene chloride	ND	5.5	1.1	ug/kg	
100-42-5	Styrene	ND	2.2	0.20	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	0.19	ug/kg	
127-18-4	Tetrachloroethene	ND	2.2	0.33	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.15

4

Report of Analysis

Page 2 of 2

4.15
4

Client Sample ID: BO-SO-15-00-02
Lab Sample ID: D75022-15
Matrix: SO - Soil
Method: SW846 8260C
Project: DUG

Date Sampled: 09/10/15
Date Received: 09/10/15
Percent Solids: 96.5

CAS No.	Compound	Result	RL	MDL	Units	Q
108-88-3	Toluene	ND	1.1	0.23	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.2	0.16	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.2	0.16	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.16	ug/kg	
108-05-4	Vinyl Acetate	ND	11	2.0	ug/kg	
75-01-4	Vinyl chloride	ND	2.2	0.22	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.30	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		70-122%
17060-07-0	1,2-Dichloroethane-D4	113%		68-124%
2037-26-5	Toluene-D8	99%		77-125%
460-00-4	4-Bromofluorobenzene	93%		72-130%

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 3

Client Sample ID:	BO-SO-15-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-15	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	96.5
Method:	SW846 8270C SW846 3546		
Project:	DUG		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G126005.D	1	09/23/15	DC	09/14/15	OP12354	E1G1654
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	690	520	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	69	20	ug/kg	
95-57-8	2-Chlorophenol	ND	69	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	69	25	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	69	21	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	350	170	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	690	520	ug/kg	
95-48-7	2-Methylphenol	ND	69	26	ug/kg	
106-44-5	4-Methylphenol	ND	69	27	ug/kg	
88-75-5	2-Nitrophenol	ND	170	69	ug/kg	
100-02-7	4-Nitrophenol	ND	350	240	ug/kg	
87-86-5	Pentachlorophenol	ND	350	170	ug/kg	
108-95-2	Phenol	ND	69	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	69	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	69	24	ug/kg	
83-32-9	Acenaphthene	ND	69	26	ug/kg	
208-96-8	Acenaphthylene	35.4	69	26	ug/kg	J
120-12-7	Anthracene	67.9	69	20	ug/kg	J
56-55-3	Benzo(a)anthracene	91.1	69	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	182	69	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	60.1	69	17	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	119	69	17	ug/kg	
50-32-8	Benzo(a)pyrene	ND	69	17	ug/kg	
100-51-6	Benzyl Alcohol	ND	69	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	69	25	ug/kg	
85-68-7	Butyl benzyl phthalate	128	69	31	ug/kg	
106-47-8	4-Chloroaniline	ND	69	35	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	69	27	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	69	33	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	69	29	ug/kg	
91-58-7	2-Chloronaphthalene	ND	69	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	69	26	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.15
4

Report of Analysis

Client Sample ID:	BO-SO-15-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-15	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	96.5
Method:	SW846 8270C SW846 3546		
Project:	DUG		

4.15

4

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	149	69	21	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	69	17	ug/kg	
132-64-9	Dibenzofuran	ND	69	26	ug/kg	
84-74-2	Di-n-butyl phthalate	52.4	69	17	ug/kg	J
95-50-1	1,2-Dichlorobenzene	ND	69	31	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	69	28	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	69	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	17	ug/kg	
84-66-2	Diethyl phthalate	ND	69	19	ug/kg	
131-11-3	Dimethyl phthalate	ND	69	20	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	69	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	69	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	69	32	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	444	69	17	ug/kg	
206-44-0	Fluoranthene	244	69	17	ug/kg	
86-73-7	Fluorene	ND	69	23	ug/kg	
118-74-1	Hexachlorobenzene	ND	69	25	ug/kg	
87-68-3	Hexachlorobutadiene	ND	69	30	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	69	24	ug/kg	
67-72-1	Hexachloroethane	ND	69	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	154	140	35	ug/kg	
78-59-1	Isophorone	ND	69	27	ug/kg	
91-57-6	2-Methylnaphthalene	ND	69	27	ug/kg	
91-20-3	Naphthalene	41.9	69	28	ug/kg	J
88-74-4	2-Nitroaniline	ND	140	21	ug/kg	
99-09-2	3-Nitroaniline	ND	170	100	ug/kg	
100-01-6	4-Nitroaniline	ND	69	17	ug/kg	
98-95-3	Nitrobenzene	ND	69	32	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	69	26	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	69	24	ug/kg	
85-01-8	Phenanthrene	126	69	20	ug/kg	
129-00-0	Pyrene	178	69	17	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	69	26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	54%		30-130%
367-12-4	2-Fluorophenol	39%		16-130%
4165-60-0	Nitrobenzene-d5	53%		19-130%
4165-62-2	Phenol-d5	38%		18-130%

ND = Not detected MDL = Method Detection Limit

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B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 3 of 3

Client Sample ID:	BO-SO-15-00-02	Date Sampled:	09/10/15
Lab Sample ID:	D75022-15	Date Received:	09/10/15
Matrix:	SO - Soil	Percent Solids:	96.5
Method:	SW846 8270C SW846 3546		
Project:	DUG		

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	62%		40-130%
118-79-6	2,4,6-Tribromophenol	57%		17-130%

4.15

4

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound



Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

PAGE 1 OF 2

Accutest Laboratories Mountain States
4036 Youngfield Street, Wheat Ridge, CO 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	RR-8/31/2015-4 D75022

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)										Matrix Codes						
Company Name <i>Weston Solutions</i>	Project Name <i>DUGS</i>	Street:																		
Street Address <i>1435 Garrison St</i>	City: <i>Denver</i>	Billing Information (If different from Report to)																		
City <i>Lakewood</i>	State <i>CO</i>	Zip <i>80215</i>	City: <i>Denver</i>	Company Name																
Project Contact <i>Roy Weindorf</i>	E-mail <i>roy.weindorf@westonsolutions.com</i>	Project# <i></i>	Street Address <i></i>																	
Phone# <i>303-729-6100</i>	Fax# <i>6101</i>	Client PO# <i></i>	City <i></i>	State <i></i>	Zip <i></i>															
Sampler(s) Name(s) <i>Roy Weindorf</i>	Phone # <i></i>	Project Manager <i>Mark Blanchard</i>	Attention: <i></i>	PO#																
Accutest Sample #	Field ID / Point of Collection	MEOH/DI Viol #	Collection			Matrix	# of bottles	Number of preserved Bottles						Baseline	TAL Metals	PPL Pesticides	pH	VOCs	SVOCs	LAB USE ONLY
			Date <i>9/10/15</i>	Time <i>0930</i>	Sampled by <i>RW</i>			HCl	NaOH	HNO3	H2SO4	NONE	DI Water							
BO-SO-01-00-02												X	X	X	X	X				01
BO-SO-02-02-06			1041		1							X	X	X						02
BO-SO-03-06-18			1157		1							X	X	X						03
BO-SO-04-00-02			0950		1							X	X	X						04
BO-SO-05-02-06			1105		1							X	X	X						05
BO-SO-06-06-18			1214		1							X	X	X						06
BO-SO-07-00-02			1007		1							X	X	X						07
BO-SO-08-02-06			1122		1							X	X	X						08
BO-SO-09-06-18			1227		1							X	X	X						09
BO-SO-10-02-06			1041		1							X	X	X						10
BO-SO-11-00-02			1235		6							X	X							11
BO-SO-12-00-02			1237		2							X	X							12

Turnaround Time (Business days)	Approved By (Accutest PM): / Date:	Comments / Special Instructions
<input checked="" type="checkbox"/> Std. 10 Business Days		
<input type="checkbox"/> Std. 5 Business Days (By Contract only)		
<input type="checkbox"/> 5 Day ✓ SH		
<input type="checkbox"/> 3 Day EMERGENC		
<input type="checkbox"/> 2 Day EMERGENC		
<input type="checkbox"/> 1 Day EMERGENC		
Emergency & Rush T/A data available via LabLink		
<input type="checkbox"/> Commercial "A" (Level 1) <input checked="" type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> Commercial "B" + Narrative <input type="checkbox"/> FULLTI (Level 3+)		<input type="checkbox"/> State Forms <input checked="" type="checkbox"/> EDD Format <input type="checkbox"/> PDF Scribe Corporable
		MS/MSDs: BO-SO-01-00-02 + BO-SO-11-00-02
		Commercial "A" = Results Only Commercial "B" = Results + QC Summary

Sample Custody must be documented below each time samples change possession, including courier delivery.											
Relinquished by Sampler: <i>1</i>	Date/Time: <i>9/10 1600</i>	Received By: <i>1</i>	Relinquished By: <i>2</i>	Date/Time: <i>9/10/15 16:00</i>	Received By: <i>2</i>	Relinquished By: <i>3</i>	Date/Time: <i>9/10/15 16:00</i>	Received By: <i>3</i>	Relinquished By: <i>4</i>	Date/Time: <i>9/10/15 16:00</i>	Received By: <i>4</i>
Relinquished by: <i>3</i>	Date/Time: <i>9/10/15 16:00</i>	Received By: <i>5</i>	Custody Seal # <i>f10</i>	Preserved where applicable		On Ice	Cooler Temp.	<i>5.7</i>			
5			<input type="checkbox"/> Intact	<input type="checkbox"/> Not intact							

D75022: Chain of Custody

Page 1 of 3



CHAIN OF CUSTODY

PAGE 2 OF 2

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

Bottle Order Control # RR-8/31/2015-4
Accutest Job # D75022

D75022: Chain of Custody
Page 2 of 3



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D75022 **Client:** WESTON SOLUTIONS **Project:** DUG
Date / Time Received: 9/10/2015 4:00:00 PM **Delivery Method:** _____
Cooler Temps (Initial/Adjusted): #1: (5.7/5.7);

Cooler Security **Y or N**

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature **Y or N**

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Bar Therm; | |
| 3. Cooler media: | Ice (Bag) | |
| 4. No. Coolers: | 1 | |

Quality Control Preservation **Y or N** **N/A**

- | | | | |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. VOCs headspace free: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

Sample Integrity - Documentation

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recv'd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

- | | | |
|---|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Sufficient volume recv'd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> |

Accutest Laboratories
V:(303) 425-6021

4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www.accutest.com

5.1

5

D75022: Chain of Custody

Page 3 of 3



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Page 1 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MB	1G125882.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	670	500	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	67	19	ug/kg	
95-57-8	2-Chlorophenol	ND	67	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	67	24	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	67	20	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	330	170	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	670	500	ug/kg	
95-48-7	2-Methylphenol	ND	67	25	ug/kg	
106-44-5	4-Methylphenol	ND	67	26	ug/kg	
88-75-5	2-Nitrophenol	ND	170	67	ug/kg	
100-02-7	4-Nitrophenol	ND	330	230	ug/kg	
87-86-5	Pentachlorophenol	ND	330	170	ug/kg	
108-95-2	Phenol	ND	67	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	67	26	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	67	23	ug/kg	
83-32-9	Acenaphthene	ND	67	25	ug/kg	
208-96-8	Acenaphthylene	ND	67	25	ug/kg	
120-12-7	Anthracene	ND	67	19	ug/kg	
56-55-3	Benzo(a)anthracene	ND	67	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	67	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	67	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	67	17	ug/kg	
50-32-8	Benzo(a)pyrene	ND	67	17	ug/kg	
100-51-6	Benzyl Alcohol	ND	67	24	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	67	24	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	67	30	ug/kg	
106-47-8	4-Chloroaniline	ND	67	33	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	67	26	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	67	32	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	67	28	ug/kg	
91-58-7	2-Chloronaphthalene	ND	67	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	67	25	ug/kg	
218-01-9	Chrysene	ND	67	20	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	67	17	ug/kg	
132-64-9	Dibenzofuran	ND	67	25	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	17	ug/kg	

Method Blank Summary

Page 2 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MB	1G125882.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	67	30	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	67	27	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	67	26	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	17	ug/kg	
84-66-2	Diethyl phthalate	ND	67	18	ug/kg	
131-11-3	Dimethyl phthalate	ND	67	20	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	67	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	67	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	67	31	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	17	ug/kg	
206-44-0	Fluoranthene	ND	67	17	ug/kg	
86-73-7	Fluorene	ND	67	22	ug/kg	
118-74-1	Hexachlorobenzene	ND	67	24	ug/kg	
87-68-3	Hexachlorobutadiene	ND	67	29	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	67	23	ug/kg	
67-72-1	Hexachloroethane	ND	67	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	130	33	ug/kg	
78-59-1	Isophorone	ND	67	26	ug/kg	
91-57-6	2-Methylnaphthalene	ND	67	26	ug/kg	
91-20-3	Naphthalene	ND	67	27	ug/kg	
88-74-4	2-Nitroaniline	ND	130	20	ug/kg	
99-09-2	3-Nitroaniline	ND	170	100	ug/kg	
100-01-6	4-Nitroaniline	ND	67	17	ug/kg	
98-95-3	Nitrobenzene	ND	67	31	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	67	25	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	67	23	ug/kg	
85-01-8	Phenanthrene	ND	67	20	ug/kg	
129-00-0	Pyrene	ND	67	17	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	67	25	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
321-60-8	2-Fluorobiphenyl	59%	30-130%
367-12-4	2-Fluorophenol	65%	16-130%
4165-60-0	Nitrobenzene-d5	61%	19-130%

Method Blank Summary

Page 3 of 3

Job Number: D75022
Account: WESTCOL Weston Solutions, Inc.
Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MB	1G125882.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No. Surrogate Recoveries Limits

4165-62-2	Phenol-d5	55%	18-130%
1718-51-0	Terphenyl-d14	108%	40-130%
118-79-6	2,4,6-Tribromophenol	62%	17-130%

Blank Spike Summary

Page 1 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-BS	1G125883.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
65-85-0	Benzoic Acid	1670	1320	79	32-130
59-50-7	4-Chloro-3-methyl phenol	1670	1370	82	52-130
95-57-8	2-Chlorophenol	1670	1200	72	47-130
120-83-2	2,4-Dichlorophenol	1670	1280	77	52-130
105-67-9	2,4-Dimethylphenol	1670	1320	79	43-130
534-52-1	4,6-Dinitro-o-cresol	1670	1580	95	37-130
51-28-5	2,4-Dinitrophenol	1670	1280	77	32-130
95-48-7	2-Methylphenol	1670	1280	77	43-130
106-44-5	4-Methylphenol	1670	1230	74	41-130
88-75-5	2-Nitrophenol	1670	1340	80	50-130
100-02-7	4-Nitrophenol	1670	1600	96	41-130
87-86-5	Pentachlorophenol	1670	1560	94	46-130
108-95-2	Phenol	1670	1250	75	46-130
95-95-4	2,4,5-Trichlorophenol	1670	1430	86	52-130
88-06-2	2,4,6-Trichlorophenol	1670	1480	89	53-130
83-32-9	Acenaphthene	1670	1400	84	58-130
208-96-8	Acenaphthylene	1670	1250	75	58-130
120-12-7	Anthracene	1670	1340	80	67-130
56-55-3	Benzo(a)anthracene	1670	1720	103	63-130
205-99-2	Benzo(b)fluoranthene	1670	1570	94	42-157
207-08-9	Benzo(k)fluoranthene	1670	1500	90	38-175
191-24-2	Benzo(g,h,i)perylene	1670	1580	95	49-152
50-32-8	Benzo(a)pyrene	1670	1570	94	47-155
100-51-6	Benzyl Alcohol	1670	1270	76	45-130
101-55-3	4-Bromophenyl phenyl ether	1670	1330	80	65-130
85-68-7	Butyl benzyl phthalate	1670	1680	101	61-130
106-47-8	4-Chloroaniline	1670	1070	64	37-130
111-91-1	bis(2-Chloroethoxy)methane	1670	1250	75	49-130
111-44-4	bis(2-Chloroethyl)ether	1670	1260	76	45-130
108-60-1	bis(2-Chloroisopropyl)ether	1670	1320	79	45-130
91-58-7	2-Chloronaphthalene	1670	1200	72	55-130
7005-72-3	4-Chlorophenyl phenyl ether	1670	1290	77	58-130
218-01-9	Chrysene	1670	1710	103	68-130
53-70-3	Dibenzo(a,h)anthracene	1670	1570	94	48-152
132-64-9	Dibenzofuran	1670	1260	76	60-130
84-74-2	Di-n-butyl phthalate	1670	1470	88	65-130

* = Outside of Control Limits.

6.2.1

Blank Spike Summary

Page 2 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-BS	1G125883.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
95-50-1	1,2-Dichlorobenzene	1670	1190	71	49-130
541-73-1	1,3-Dichlorobenzene	1670	1140	68	49-130
106-46-7	1,4-Dichlorobenzene	1670	1120	67	49-130
91-94-1	3,3'-Dichlorobenzidine	1670	1710	103	10-180
84-66-2	Diethyl phthalate	1670	1460	88	60-130
131-11-3	Dimethyl phthalate	1670	1490	89	59-130
121-14-2	2,4-Dinitrotoluene	1670	1650	99	64-130
606-20-2	2,6-Dinitrotoluene	1670	1630	98	63-130
117-84-0	Di-n-octyl phthalate	1670	1610	97	35-169
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1800	108	59-130
206-44-0	Fluoranthene	1670	1340	80	64-130
86-73-7	Fluorene	1670	1250	75	58-130
118-74-1	Hexachlorobenzene	1670	1350	81	66-130
87-68-3	Hexachlorobutadiene	1670	1210	73	51-130
77-47-4	Hexachlorocyclopentadiene	1670	1150	69	34-130
67-72-1	Hexachloroethane	1670	1120	67	45-130
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1560	94	45-153
78-59-1	Isophorone	1670	1400	84	50-130
91-57-6	2-Methylnaphthalene	1670	1120	67	54-130
91-20-3	Naphthalene	1670	1070	64	53-130
88-74-4	2-Nitroaniline	1670	1480	89	54-130
99-09-2	3-Nitroaniline	1670	1470	88	28-133
100-01-6	4-Nitroaniline	1670	1630	98	55-130
98-95-3	Nitrobenzene	1670	1320	79	49-130
86-30-6	N-Nitrosodiphenylamine	1670	1360	82	52-133
621-64-7	N-Nitroso-di-n-propylamine	1670	1070	64	47-130
85-01-8	Phenanthrene	1670	1320	79	66-130
129-00-0	Pyrene	1670	1440	86	68-130
120-82-1	1,2,4-Trichlorobenzene	1670	1130	68	53-130

CAS No.	Surrogate Recoveries	BSP	Limits
321-60-8	2-Fluorobiphenyl	67%	30-130%
367-12-4	2-Fluorophenol	67%	16-130%
4165-60-0	Nitrobenzene-d5	66%	19-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-BS	1G125883.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:**Method:** SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Surrogate Recoveries	BSP	Limits
4165-62-2	Phenol-d5	65%	18-130%
1718-51-0	Terphenyl-d14	84%	40-130%
118-79-6	2,4,6-Tribromophenol	78%	17-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MS	1G125886.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
OP12354-MSD	1G125887.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
D75022-11	1G125885.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	D75022-11		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
65-85-0	Benzoic Acid	ND		1760	ND	0* a	1760	ND	0* a	nc	10-130/30
59-50-7	4-Chloro-3-methyl phenol	ND		1760	1260	72	1760	1230	70	2	26-130/30
95-57-8	2-Chlorophenol	ND		1760	1190	68	1760	1240	70	4	27-130/30
120-83-2	2,4-Dichlorophenol	ND		1760	1280	73	1760	1280	73	0	28-130/30
105-67-9	2,4-Dimethylphenol	ND		1760	1140	65	1760	1170	66	3	10-130/30
534-52-1	4,6-Dinitro-o-cresol	ND		1760	782	44	1760	736	42	6	10-130/30
51-28-5	2,4-Dinitrophenol	ND		1760	550	31	1760	ND	0* a	200* b	10-130/30
95-48-7	2-Methylphenol	ND		1760	1190	68	1760	1220	69	2	22-130/30
106-44-5	4-Methylphenol	ND		1760	1220	69	1760	1260	72	3	10-131/30
88-75-5	2-Nitrophenol	ND		1760	1420	81	1760	1440	82	1	24-130/30
100-02-7	4-Nitrophenol	ND		1760	991	56	1760	1040	59	5	10-130/30
87-86-5	Pentachlorophenol	ND		1760	1140	65	1760	1150	65	1	10-130/30
108-95-2	Phenol	ND		1760	1140	65	1760	1160	66	2	21-130/30
95-95-4	2,4,5-Trichlorophenol	ND		1760	1300	74	1760	1330	76	2	25-130/30
88-06-2	2,4,6-Trichlorophenol	ND		1760	1450	82	1760	1440	82	1	22-130/30
83-32-9	Acenaphthene	ND		1760	1400	80	1760	1370	78	2	36-130/30
208-96-8	Acenaphthylene	ND		1760	1270	72	1760	1270	72	0	10-150/30
120-12-7	Anthracene	147		1760	1290	65	1760	1250	63	3	50-130/30
56-55-3	Benzo(a)anthracene	41.8	J	1760	1580	87	1760	1560	86	1	41-130/30
205-99-2	Benzo(b)fluoranthene	143		1760	1560	81	1760	1490	77	5	29-152/30
207-08-9	Benzo(k)fluoranthene	126		1760	1350	70	1760	1350	70	0	14-175/30
191-24-2	Benzo(g,h,i)perylene	111		1760	1510	79	1760	1500	79	1	15-164/30
50-32-8	Benzo(a)pyrene	ND		1760	1800	102	1760	1770	101	2	27-151/30
100-51-6	Benzyl Alcohol	ND		1760	1250	71	1760	1270	72	2	21-130/30
101-55-3	4-Bromophenyl phenyl ether	ND		1760	1200	68	1760	1210	69	1	44-130/30
85-68-7	Butyl benzyl phthalate	ND		1760	1870	106	1760	1870	106	0	46-130/30
106-47-8	4-Chloroaniline	ND		1760	478	27	1760	448	25	6	10-130/30
111-91-1	bis(2-Chloroethoxy)methane	ND		1760	1290	73	1760	1270	72	2	24-130/30
111-44-4	bis(2-Chloroethyl)ether	ND		1760	1390	79	1760	1440	82	4	32-130/30
108-60-1	bis(2-Chloroisopropyl)ether	ND		1760	1310	74	1760	1290	73	2	28-130/30
91-58-7	2-Chloronaphthalene	ND		1760	1290	73	1760	1270	72	2	11-140/30
7005-72-3	4-Chlorophenyl phenyl ether	ND		1760	1290	73	1760	1270	72	2	19-142/30
218-01-9	Chrysene	57.2	J	1760	1660	91	1760	1600	88	4	46-130/30
53-70-3	Dibenzo(a,h)anthracene	ND		1760	1610	91	1760	1600	91	1	31-152/30
132-64-9	Dibenzofuran	ND		1760	1290	73	1760	1270	72	2	10-163/30
84-74-2	Di-n-butyl phthalate	ND		1760	1530	87	1760	1510	86	1	50-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 3

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MS	1G125886.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
OP12354-MSD	1G125887.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
D75022-11	1G125885.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	D75022-11		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
95-50-1	1,2-Dichlorobenzene	ND		1760	1230	70	1760	1270	72	3	30-130/30
541-73-1	1,3-Dichlorobenzene	ND		1760	1170	66	1760	1230	70	5	30-130/30
106-46-7	1,4-Dichlorobenzene	ND		1760	1140	65	1760	1210	69	6	29-130/30
91-94-1	3,3'-Dichlorobenzidine	ND		1760	ND	0* a	1760	ND	0* a	nc	10-180/30
84-66-2	Diethyl phthalate	ND		1760	1330	76	1760	1320	75	1	20-143/30
131-11-3	Dimethyl phthalate	ND		1760	1390	79	1760	1370	78	1	16-143/30
121-14-2	2,4-Dinitrotoluene	ND		1760	1420	81	1760	1400	80	1	16-148/30
606-20-2	2,6-Dinitrotoluene	ND		1760	1540	88	1760	1470	84	5	23-139/30
117-84-0	Di-n-octyl phthalate	ND		1760	1650	94	1760	1640	93	1	10-190/30
117-81-7	bis(2-Ethylhexyl)phthalate	123		1760	1870	99	1760	1870	99	0	37-131/30
206-44-0	Fluoranthene	197		1760	1410	69	1760	1390	68	1	53-130/30
86-73-7	Fluorene	ND		1760	1220	69	1760	1160	66	5	24-134/30
118-74-1	Hexachlorobenzene	ND		1760	1160	66	1760	1170	66	1	46-130/30
87-68-3	Hexachlorobutadiene	ND		1760	1320	75	1760	1360	77	3	26-130/30
77-47-4	Hexachlorocyclopentadiene	ND		1760	779	44	1760	501	28	43* b	10-130/30
67-72-1	Hexachloroethane	ND		1760	1130	64	1760	1100	63	3	10-167/30
193-39-5	Indeno(1,2,3-cd)pyrene	123	J	1760	1600	84	1760	1650	87	3	26-153/30
78-59-1	Isophorone	ND		1760	1450	82	1760	1380	78	5	32-130/30
91-57-6	2-Methylnaphthalene	ND		1760	1190	68	1760	1180	67	1	10-148/30
91-20-3	Naphthalene	ND		1760	1150	65	1760	1180	67	3	27-130/30
88-74-4	2-Nitroaniline	ND		1760	1370	78	1760	1370	78	0	10-146/30
99-09-2	3-Nitroaniline	ND		1760	685	39	1760	672	38	2	15-131/30
100-01-6	4-Nitroaniline	ND		1760	634	36	1760	631	36	0	13-130/30
98-95-3	Nitrobenzene	ND		1760	1360	77	1760	1360	77	0	33-130/30
86-30-6	N-Nitrosodiphenylamine	ND		1760	1130	64	1760	1140	65	1	17-155/30
621-64-7	N-Nitroso-di-n-propylamine	ND		1760	1170	66	1760	1180	67	1	30-130/30
85-01-8	Phenanthrene	156		1760	1240	62	1760	1230	61	1	38-130/30
129-00-0	Pyrene	145		1760	1800	94	1760	1760	92	2	53-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		1760	1200	68	1760	1220	69	2	30-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D75022-11	Limits
321-60-8	2-Fluorobiphenyl	69%	66%	55%	30-130%
367-12-4	2-Fluorophenol	60%	58%	49%	16-130%
4165-60-0	Nitrobenzene-d5	67%	64%	57%	19-130%

* = Outside of Control Limits.

6.3.1
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Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12354-MS	1G125886.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
OP12354-MSD	1G125887.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650
D75022-11	1G125885.D	1	09/18/15	DC	09/14/15	OP12354	E1G1650

The QC reported here applies to the following samples:

Method: SW846 8270C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Surrogate Recoveries	MS	MSD	D75022-11	Limits
4165-62-2	Phenol-d5	57%	55%	43%	18-130%
1718-51-0	Terphenyl-d14	90%	86%	73%	40-130%
118-79-6	2,4,6-Tribromophenol	63%	61%	56%	17-130%

- (a) Outside control limits due to possible matrix interference.
(b) High RPD due to possible sample nonhomogeneity.

* = Outside of Control Limits.



GC Semi-volatiles

QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12380-MB	GEH25192.D	1	09/22/15	TR	09/17/15	OP12380	GEH1243

The QC reported here applies to the following samples:

Method: SW846 8081A

D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.67	0.33	ug/kg	
319-84-6	alpha-BHC	ND	0.67	0.33	ug/kg	
319-85-7	beta-BHC	ND	0.67	0.37	ug/kg	
319-86-8	delta-BHC	ND	0.67	0.33	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.67	0.33	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.67	0.33	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.67	0.33	ug/kg	
12789-03-6	Chlordane	ND	17	10	ug/kg	
72-54-8	4,4'-DDD	ND	0.67	0.33	ug/kg	
72-55-9	4,4'-DDE	ND	0.67	0.33	ug/kg	
50-29-3	4,4'-DDT	ND	0.67	0.37	ug/kg	
60-57-1	Dieldrin	ND	0.67	0.33	ug/kg	
72-20-8	Endrin	ND	0.67	0.33	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.67	0.33	ug/kg	
53494-70-5	Endrin ketone	ND	0.67	0.33	ug/kg	
959-98-8	Endosulfan-I	ND	0.67	0.33	ug/kg	
33213-65-9	Endosulfan-II	ND	0.67	0.33	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.67	0.33	ug/kg	
76-44-8	Heptachlor	ND	0.67	0.33	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.67	0.33	ug/kg	
72-43-5	Methoxychlor	ND	0.67	0.50	ug/kg	
8001-35-2	Toxaphene	ND	33	23	ug/kg	

CAS No.	Surrogate Recoveries	Limits
877-09-8	Tetrachloro-m-xylene	88% 45-156%
877-09-8	Tetrachloro-m-xylene	87% 45-156%
2051-24-3	Decachlorobiphenyl	100% 41-179%
2051-24-3	Decachlorobiphenyl	100% 41-179%

Blank Spike Summary

Page 1 of 1

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12380-BS	GEH25193.D	1	09/22/15	TR	09/17/15	OP12380	GEH1243

The QC reported here applies to the following samples:

Method: SW846 8081A

D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
309-00-2	Aldrin	26.7	22.7	85	66-130
319-84-6	alpha-BHC	26.7	24.2	91	66-130
319-85-7	beta-BHC	26.7	24.7	93	67-130
319-86-8	delta-BHC	26.7	23.9	90	58-130
58-89-9	gamma-BHC (Lindane)	26.7	23.7	89	63-130
5103-71-9	alpha-Chlordane	26.7	25.4	95	67-130
5103-74-2	gamma-Chlordane	26.7	25.5	96	69-130
72-54-8	4,4'-DDD	26.7	29.0	109	70-130
72-55-9	4,4'-DDE	26.7	27.7	104	68-130
50-29-3	4,4'-DDT	26.7	27.8	104	55-132
60-57-1	Dieldrin	26.7	27.3	102	70-130
72-20-8	Endrin	26.7	30.2	113	55-130
7421-93-4	Endrin aldehyde	26.7	21.1	79	60-130
53494-70-5	Endrin ketone	26.7	25.9	97	67-133
959-98-8	Endosulfan-I	26.7	21.0	79	70-130
33213-65-9	Endosulfan-II	26.7	25.5	96	70-130
1031-07-8	Endosulfan sulfate	26.7	31.4	118	70-130
76-44-8	Heptachlor	26.7	25.4	95	61-130
1024-57-3	Heptachlor epoxide	26.7	25.1	94	70-130
72-43-5	Methoxychlor	26.7	27.6	104	64-140

CAS No.	Surrogate Recoveries	BSP	Limits
877-09-8	Tetrachloro-m-xylene	75%	45-156%
877-09-8	Tetrachloro-m-xylene	87%	45-156%
2051-24-3	Decachlorobiphenyl	101%	41-179%
2051-24-3	Decachlorobiphenyl	100%	41-179%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D75022

Account: WESTCOL Weston Solutions, Inc.

Project: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12380-MS	GEH25229.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
OP12380-MSD	GEH25230.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245
D75022-1 ^a	GEH25231.D	10	09/23/15	TR	09/17/15	OP12380	GEH1245

The QC reported here applies to the following samples:

Method: SW846 8081A

D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

CAS No.	Compound	D75022-1		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
309-00-2	Aldrin	ND		29.2	26.9	92	29.1	26.3	90	2	37-131/30
319-84-6	alpha-BHC	ND		29.2	27.3	93	29.1	26.0	89	5	13-154/30
319-85-7	beta-BHC	ND		29.2	28.2	97	29.1	26.7	92	5	10-160/30
319-86-8	delta-BHC	ND		29.2	24.9	85	29.1	23.8	82	5	28-135/30
58-89-9	gamma-BHC (Lindane)	ND		29.2	28.2	97	29.1	26.6	91	6	23-153/30
5103-71-9	alpha-Chlordane	17.8		29.2	46.5	98	29.1	43.6	89	6	37-140/30
5103-74-2	gamma-Chlordane	9.4		29.2	36.3	92	29.1	34.7	87	5	10-174/30
72-54-8	4,4'-DDD	ND		29.2	34.6	118	29.1	32.7	112	6	27-158/30
72-55-9	4,4'-DDE	5.9	J	29.2	34.3	97	29.1	32.2	90	6	28-163/30
50-29-3	4,4'-DDT	8.4		29.2	37.4	99	29.1	34.5	90	8	35-160/30
60-57-1	Dieldrin	ND		29.2	34.6	118	29.1	32.4	111	7	53-130/30
72-20-8	Endrin	ND		29.2	36.5	125	29.1	34.0	117	7	39-143/30
7421-93-4	Endrin aldehyde	ND		29.2	24.0	82	29.1	22.9	79	5	18-166/30
53494-70-5	Endrin ketone	ND		29.2	27.0	92	29.1	24.4	84	10	43-146/30
959-98-8	Endosulfan-I	ND		29.2	27.0	92	29.1	25.4	87	6	37-150/30
33213-65-9	Endosulfan-II	ND		29.2	26.3	90	29.1	24.9	86	5	42-156/30
1031-07-8	Endosulfan sulfate	ND		29.2	35.9	123	29.1	35.5	122	1	45-154/30
76-44-8	Heptachlor	ND		29.2	27.5	94	29.1	26.8	92	3	21-157/30
1024-57-3	Heptachlor epoxide	5.0	J	29.2	29.0	82	29.1	28.8	82	1	35-156/30
72-43-5	Methoxychlor	ND		29.2	32.8	112	29.1	30.9	106	6	34-182/30

CAS No.	Surrogate Recoveries	MS	MSD	D75022-1	Limits
877-09-8	Tetrachloro-m-xylene	83%	85%	83%	45-156%
877-09-8	Tetrachloro-m-xylene	91%	84%	83%	45-156%
2051-24-3	Decachlorobiphenyl	110%	133%	114%	41-179%
2051-24-3	Decachlorobiphenyl	109%	103%	105%	41-179%

(a) Elevated reporting limits due to sample matrix, dilution required during sample analysis.

* = Outside of Control Limits.



Metals Analysis

QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16909
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date:

09/14/15

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.083	.00088	.0067	-0.00073 <0.083	

Associated samples MP16909: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16909
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 09/14/15

Metal	D74858-1 Original MS	Spikelot HGWSR1	QC % Rec	QC Limits
Mercury	0.046	0.40	0.38	93.2 75-125

Associated samples MP16909: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16909
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date:

09/14/15

Metal	D74858-1 Original MSD	Spikelot HGWSR1	MSD % Rec	QC RPD	QC Limit
Mercury	0.046	0.38	0.368	90.7	5.1 20

Associated samples MP16909: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16909
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 09/14/15

Metal	BSP Result	Spikelot HGWSR1	QC % Rec	QC Limits
Mercury	0.30	0.333	90.0	80-120

Associated samples MP16909: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

8.1.3
8

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/15/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	1.1	1.7	-0.010	<10
Antimony	3.0	.21	.82	-0.31	<3.0
Arsenic	2.5	.38	2.1	0.11	<2.5
Barium	1.0	.02	.03	0.080	<1.0
Beryllium	1.0	.09	.16	0.16	<1.0
Boron	5.0	.08	.29		
Cadmium	1.0	.02	.1	-0.010	<1.0
Calcium	40	.24	9.6	8.0	<40
Chromium	1.0	.03	.07	0.010	<1.0
Cobalt	0.50	.05	.12	0.13	<0.50
Copper	1.0	.08	.48	0.35	<1.0
Iron	7.0	.15	.69	7.0	* (a)
Lead	5.0	.21	.6	0.35	<5.0
Lithium	0.50	.04	.07		
Magnesium	20	.68	3.9	0.75	<20
Manganese	0.50	.05	.07	0.040	<0.50
Molybdenum	1.0	.04	.36		
Nickel	3.0	.05	.24	0.12	<3.0
Phosphorus	10	1.5	4.3		
Potassium	200	9.9	6	4.7	<200
Selenium	5.0	.71	1	0.26	<5.0
Silicon	5.0	.47	.91		
Silver	3.0	.03	.05	0.040	<3.0
Sodium	40	.73	1.5	2.7	<40
Strontium	5.0	.001	.03		
Thallium	1.0	.18	.86	0.19	<1.0
Tin	5.0	1.2	1.2		
Titanium	1.0	.01	.27		
Uranium	5.0	.29	.44		
Vanadium	1.0	.04	.07	-0.020	<1.0
Zinc	3.0	.04	.35	0.79	<3.0

Associated samples MP16910: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

09/15/15

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested

(a) All sample results < RL or > 10x MB concentration.



8.2.1
8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16910
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 09/15/15

Metal	D75022-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	13300	16600	548	602.6(a) 75-125
Antimony	0.0	7.6	55	27.6N(b) 75-125
Arsenic	8.8	110	110	92.4 75-125
Barium	229	461	219	105.9 75-125
Beryllium	1.3	51.5	54.8	91.7 75-125
Boron	anr			
Cadmium	0.59	52.7	54.8	95.2 75-125
Calcium	10600	13400	2740	102.3 75-125
Chromium	12.1	60.4	54.8	88.2 75-125
Cobalt	8.3	54.8	54.8	84.9 75-125
Copper	25.9	81.6	54.8	101.7 75-125
Iron	19400	22200	548	511.3(a) 75-125
Lead	44.1	138	110	85.7 75-125
Lithium				
Magnesium	3970	6920	2740	107.7 75-125
Manganese	453	515	54.8	113.2 75-125
Molybdenum	anr			
Nickel	10.4	55.7	54.8	82.7 75-125
Phosphorus				
Potassium	4390	7160	2740	101.2 75-125
Selenium	0.0	93.9	110	85.7 75-125
Silicon				
Silver	0.0	14.2	21.9	64.8N(b) 75-125
Sodium	284	2780	2740	91.2 75-125
Strontium	anr			
Thallium	3.4	97.4	110	85.8 75-125
Tin	anr			
Titanium	anr			
Uranium	anr			
Vanadium	39.9	94.4	54.8	99.5 75-125
Zinc	112	161	54.8	89.5 75-125

Associated samples MP16910: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/15/15

Metal	D75022-1 Original MS	Spikelot ICPALL2	QC % Rec	QC Limits
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- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16910
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date:

09/15/15

Metal	D75022-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	13300	16900	542	663.9(a)	1.8	20
Antimony	0.0	6.2	54	5.7N (b)	20.3 (c)	20
Arsenic	8.8	107	108	90.6	1.9	20
Barium	229	501	217	125.4N(b)	8.3	20
Beryllium	1.3	51.6	54.2	92.8	0.2	20
Boron	anr					
Cadmium	0.59	52.6	54.2	95.9	0.2	20
Calcium	10600	14000	2710	125.4N(b)	4.4	20
Chromium	12.1	58.9	54.2	86.3	2.5	20
Cobalt	8.3	55.4	54.2	86.9	1.1	20
Copper	25.9	82.2	54.2	103.8	0.7	20
Iron	19400	21000	542	295.1(a)	5.6	20
Lead	44.1	136	108	84.7	1.2	20
Lithium						
Magnesium	3970	6870	2710	107.0	0.7	20
Manganese	453	529	54.2	140.2(a)	2.3	20
Molybdenum	anr					
Nickel	10.4	55.8	54.2	83.7	1.2	20
Phosphorus						
Potassium	4390	7270	2710	106.2	1.5	20
Selenium	0.0	92.9	108	85.7	1.1	20
Silicon						
Silver	0.0	14.3	21.7	65.9N(b)	0.7	20
Sodium	284	2730	2710	90.2	1.8	20
Strontium	anr					
Thallium	3.4	97.4	108	86.7	0.0	20
Tin	anr					
Titanium	anr					
Uranium	anr					
Vanadium	39.9	90.1	54.2	92.6	4.7	20
Zinc	112	163	54.2	94.1	1.2	20

Associated samples MP16910: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

09/15/15

Metal	D75022-1 Original MSD	Spikelot ICPALL2	MSD % Rec	RPD	QC Limit
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- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference.
(c) High RPD due to possible sample matrix or nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16910
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 09/15/15

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	466	500	93.2	80-120
Antimony	45.8	50	91.6	80-120
Arsenic	105	100	105.0	80-120
Barium	197	200	98.5	80-120
Beryllium	54.5	50	109.0	80-120
Boron	anr			
Cadmium	54.2	50	108.4	80-120
Calcium	2500	2500	100.0	80-120
Chromium	50.5	50	101.0	80-120
Cobalt	50.6	50	101.2	80-120
Copper	52.1	50	104.2	80-120
Iron	498	500	99.6	80-120
Lead	104	100	104.0	80-120
Lithium				
Magnesium	2620	2500	104.8	80-120
Manganese	51.3	50	102.6	80-120
Molybdenum	anr			
Nickel	50.7	50	101.4	80-120
Phosphorus				
Potassium	2430	2500	97.2	80-120
Selenium	102	100	102.0	80-120
Silicon				
Silver	18.9	20	94.5	80-120
Sodium	2490	2500	99.6	80-120
Strontium	anr			
Thallium	105	100	105.0	80-120
Tin	anr			
Titanium	anr			
Uranium	anr			
Vanadium	50.4	50	100.8	80-120
Zinc	50.5	50	101.0	80-120

Associated samples MP16910: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/15/15

Metal	BSP Result	Spikelot ICPALL2	QC % Rec	QC Limits
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(anr) Analyte not requested

8.2.3
8

SERIAL DILUTION RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16910
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: ug/l

Prep Date: 09/15/15

Metal	D75022-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	123000	139000	2.7	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic	81.5	107	30.7 (a)	0-10
Barium	2130	2300	7.7	0-10
Beryllium	12.4	21.5	73.4 (a)	0-10
Boron	anr			
Cadmium	5.50	2.50	54.5 (a)	0-10
Calcium	98600	116000	17.5*(b)	0-10
Chromium	113	125	10.2*(b)	0-10
Cobalt	77.1	106	36.8*(b)	0-10
Copper	241	247	2.4	0-10
Iron	181000	204000	12.9*(b)	0-10
Lead	411	513	24.9*(b)	0-10
Lithium				
Magnesium	37000	41600	12.4*(b)	0-10
Manganese	4220	5050	19.6*(b)	0-10
Molybdenum	anr			
Nickel	97.2	122	25.5*(b)	0-10
Phosphorus				
Potassium	40800	44000	7.8	0-10
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium	2640	2780	5.0	0-10
Strontium	anr			
Thallium	32.0	89.5	179.7(a)	0-10
Tin	anr			
Titanium	anr			
Uranium	anr			
Vanadium	371	425	14.4*(b)	0-10
Zinc	1050	1350	29.0*(b)	0-10

Associated samples MP16910: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16910
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 09/15/15

Metal	D75022-1	Original	SDL 1:5	%DIF	QC	Limits
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- (anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
(b) Serial dilution indicates possible matrix interference.

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

09/16/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	1.1	1.7	-0.43	<10
Antimony	3.0	.21	.82	-0.050	<3.0
Arsenic	2.5	.38	2.1	-0.48	<2.5
Barium	1.0	.02	.03	0.050	<1.0
Beryllium	1.0	.09	.16	0.010	<1.0
Boron	5.0	.08	.29		
Cadmium	1.0	.02	.1	0.010	<1.0
Calcium	40	.24	9.6	1.7	<40
Chromium	1.0	.03	.07	0.010	<1.0
Cobalt	0.50	.05	.12	0.060	<0.50
Copper	1.0	.08	.48	0.35	<1.0
Iron	7.0	.15	.69	3.0	<7.0
Lead	5.0	.21	.6	0.31	<5.0
Lithium	0.50	.04	.07		
Magnesium	20	.68	3.9	0.48	<20
Manganese	0.50	.05	.07	0.040	<0.50
Molybdenum	1.0	.04	.36		
Nickel	3.0	.05	.24	0.14	<3.0
Phosphorus	10	1.5	4.3		
Potassium	200	9.9	6	2.2	<200
Selenium	5.0	.71	1	0.89	<5.0
Silicon	5.0	.47	.91		
Silver	3.0	.03	.05	0.020	<3.0
Sodium	40	.73	1.5	-0.42	<40
Strontium	5.0	.001	.03		
Thallium	1.0	.18	.86	0.060	<1.0
Tin	5.0	1.2	1.2		
Titanium	1.0	.01	.27		
Uranium	5.0	.29	.44		
Vanadium	1.0	.04	.07	0.0	<1.0
Zinc	3.0	.04	.35	0.24	<3.0

Associated samples MP16935: D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

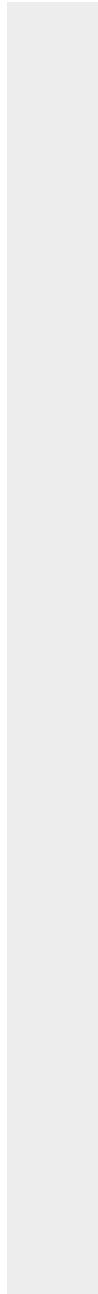
Methods: SW846 6010C
Units: mg/kg

Prep Date:

09/16/15

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16935
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date:

09/16/15

Metal	D75080-1 Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	14700	13000	526	-323.3(a	75-125
Antimony	0.0	11.1	52.5	21.2N(b)	75-125
Arsenic	9.3	106	105	91.9	75-125
Barium	518	861	210	163.1N(b	75-125
Beryllium	1.1	48.7	52.6	90.5	75-125
Boron					
Cadmium	0.34	50.4	52.6	95.2	75-125
Calcium	30200	62400	2630	1224.7(a	75-125
Chromium	45.4	78.9	52.6	63.7N(b)	75-125
Cobalt	9.2	51.0	52.6	79.5	75-125
Copper	16.0	61.8	52.6	87.1	75-125
Iron	21300	17600	526	-703.6(a	75-125
Lead	8.4	100	105	87.1	75-125
Lithium					
Magnesium	7280	11300	2630	152.9N(b	75-125
Manganese	365	369	52.6	7.6 (a)	75-125
Molybdenum					
Nickel	33.9	63.8	52.6	56.9N(b)	75-125
Phosphorus					
Potassium	888	3430	2630	96.7	75-125
Selenium	0.0	93.6	105	89.0	75-125
Silicon					
Silver	0.0	14.9	21	70.8N(b)	75-125
Sodium	7170	8670	2630	57.0N(b)	75-125
Strontium					
Thallium	4.2	91.5	105	83.0	75-125
Tin					
Titanium					
Uranium					
Vanadium	36.8	75.9	52.6	74.4N(b)	75-125
Zinc	47.4	80.6	52.6	63.1N(b)	75-125

Associated samples MP16935: D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/16/15

Metal	D75080-1 Original MS	Spikelot ICPALL2	QC % Rec	QC Limits
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- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16935
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date:

09/16/15

Metal	D75080-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	14700	15400	531	131.9(a)	16.9	20
Antimony	0.0	11.3	58	21.2N(b)	1.8	20
Arsenic	9.3	110	106	94.8	3.7	20
Barium	518	752	212	110.2	13.5	20
Beryllium	1.1	51.3	53.1	94.6	5.2	20
Boron						
Cadmium	0.34	51.9	53.1	97.1	2.9	20
Calcium	30200	32900	2650	101.7	61.9 (c)	20
Chromium	45.4	92.7	53.1	89.1	16.1	20
Cobalt	9.2	54.4	53.1	85.1	6.5	20
Copper	16.0	66.9	53.1	95.9	7.9	20
Iron	21300	21100	531	-37.7(a)	18.1	20
Lead	8.4	105	106	91.0	4.9	20
Lithium						
Magnesium	7280	9440	2650	81.4	17.9	20
Manganese	365	409	53.1	82.9	10.3	20
Molybdenum						
Nickel	33.9	75.3	53.1	78.0	16.5	20
Phosphorus						
Potassium	888	3390	2650	94.3	1.2	20
Selenium	0.0	94.4	106	88.9	0.9	20
Silicon						
Silver	0.0	14.5	21.2	68.3N(b)	2.7	20
Sodium	7170	10500	2650	125.5N(b)	19.1	20
Strontium						
Thallium	4.2	97.9	106	88.3	6.8	20
Tin						
Titanium						
Uranium						
Vanadium	36.8	84.5	53.1	89.9	10.7	20
Zinc	47.4	90.1	53.1	80.4	11.1	20

Associated samples MP16935: D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

09/16/15

Metal	D75080-1 Original MSD	Spikelot ICPALL2	MSD % Rec	RPD	QC Limit
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- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference.
(c) High RPD due to possible sample matrix or nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16935
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date:

09/16/15

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	478	500	95.6	80-120
Antimony	46.3	50	92.6	80-120
Arsenic	105	100	105.0	80-120
Barium	205	200	102.5	80-120
Beryllium	55.1	50	110.2	80-120
Boron				
Cadmium	52.9	50	105.8	80-120
Calcium	2490	2500	99.6	80-120
Chromium	49.4	50	98.8	80-120
Cobalt	50.0	50	100.0	80-120
Copper	52.2	50	104.4	80-120
Iron	490	500	98.0	80-120
Lead	103	100	103.0	80-120
Lithium				
Magnesium	2550	2500	102.0	80-120
Manganese	50.7	50	101.4	80-120
Molybdenum				
Nickel	49.9	50	99.8	80-120
Phosphorus				
Potassium	2450	2500	98.0	80-120
Selenium	102	100	102.0	80-120
Silicon				
Silver	19.5	20	97.5	80-120
Sodium	2470	2500	98.8	80-120
Strontium				
Thallium	105	100	105.0	80-120
Tin				
Titanium				
Uranium				
Vanadium	49.9	50	99.8	80-120
Zinc	49.1	50	98.2	80-120

Associated samples MP16935: D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/16/15

Metal	BSP Result	Spikelot ICPALL2	QC % Rec	QC Limits
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(anr) Analyte not requested

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SERIAL DILUTION RESULTS SUMMARY

Login Number: D75022
 Account: WESTCOL - Weston Solutions, Inc.
 Project: DUG

QC Batch ID: MP16935
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: ug/l

Prep Date: 09/16/15

Metal	D75080-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	145000	147000	0.8	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic	91.4	158	72.3 (a)	0-10
Barium	5110	5390	5.4	0-10
Beryllium	11.3	14.0	23.9 (a)	0-10
Boron				
Cadmium	3.40	0.00	100.0(a)	0-10
Calcium	298000	353000	18.2*(b)	0-10
Chromium	448	510	13.9*(b)	0-10
Cobalt	91.1	121	32.3*(b)	0-10
Copper	158	145	7.9	0-10
Iron	210000	239000	14.1*(b)	0-10
Lead	83.2	113	35.8 (a)	0-10
Lithium				
Magnesium	71800	80700	12.3*(b)	0-10
Manganese	3600	4230	17.4*(b)	0-10
Molybdenum				
Nickel	334	398	18.9*(b)	0-10
Phosphorus				
Potassium	8760	8720	0.5	0-10
Selenium	0.00	40.0	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium	70800	77800	9.9	0-10
Strontium				
Thallium	41.2	113	173.1(a)	0-10
Tin				
Titanium				
Uranium				
Vanadium	363	409	12.4*(b)	0-10
Zinc	468	587	25.4*(b)	0-10

Associated samples MP16935: D75022-8, D75022-9, D75022-10

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

QC Batch ID: MP16935
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 09/16/15

Metal	D75080-1	Original	SDL 1:5	%DIF	QC	Limits
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- (anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
(b) Serial dilution indicates possible matrix interference.



General Chemistry

QC Data Summaries

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Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D75022
Account: WESTCOL - Weston Solutions, Inc.
Project: DUG

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
pH	GN31540			su	8.00	7.97	99.6	99.1-100.9%

Associated Samples:

Batch GN31540: D75022-1, D75022-2, D75022-3, D75022-4, D75022-5, D75022-6, D75022-7, D75022-8, D75022-9, D75022-10
(*) Outside of QC limits



Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody



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CHAIN OF CUSTODY

Page 1 of 1

4236 Youngfield Street, Wheat Ridge, CO 80033
TEL: 303-425-6621 FAX: 303-425-6554
www.acceltest.com

Client / Reporting Information		Project Information						Requested Analysis (see TEST CODE sheet)						
Company Name Accutest Laboratories		Project Name DUG												
Street Address 4038 Youngfield Street		Site ID Being Information (if different from Report ID)												
City Wheat Ridge, CO	State 80033	Zip 80033	City CITY	State STATE	Comments Comments None									
Project Contact Email jerryayd_jerryayd@accutest.com		Project # 303-425-6021		Street Address										
Phone # 303-425-6021		Fax # Client Purchase Order #		City CITY		State STATE		Zip ZIP						
Sampler's Name(s) RWN		Phone / Project Manager		Address										
Acceptor's Name Field ID : Point of Collector		MED-AD-Via #		Collection		Sampled by	Method	Analysis	Number of preserved Subs				WATER/HR	LAB USE ONLY
				Date 9/10/15	Time 12:35:00 PM				HW	HWD	HWD	HWV		
11M	BO-SO-11-00-02											X		
11D	BO-SO-11-00-02											X		
11	BO-SO-11-00-02											X		
12	BO-SO-12-00-02											X		
13	BO-SO-13-00-02											X		
14	BO-SO-14-00-02											X		
15	BO-SO-15-00-02											X		
INITIAL ASSESSMENT <i>OK</i>														
LABEL VERIFICATION <i>OK</i>														
Turnaround Time / Business days		Data Device /able Information						Comments / Special Instructions						
Approved By (Acceptor PW) : Date:		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3-6) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" <small>Commercial "A" = Results Only Commercial "B" = Results + QC Summary NJ Reduced = Results + QC Summary + Partial Raw Data</small>						<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input checked="" type="checkbox"/> State UCMR/Md <input type="checkbox"/> EDD Formatted <input type="checkbox"/> Other _____						
<input type="checkbox"/> 95% 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input checked="" type="checkbox"/> none Due 9/24/2015 <small>Emergency & RUSH - 24 hr. data available via LabLink</small>														
Sample Custody must be documented below each time samples change possession, including courier delivery.														
Reimbursed by Sampler <i>JAY</i>	Date/Tx 8/15/15	Received By 1	Reimbursed By 2	Date/Tx 9/15/15 05:40		Received By 3	Date/Tx 9/15/15 05:40		Received By 4	Date/Tx 9/15/15 05:40		Received By 5	Date/Tx 9/15/15 05:40	
Reimbursed by Sampler Received By Reimbursed By Received By Received By <small>Sample Custody must be documented below each time samples change possession, including courier delivery.</small>														

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D75022: Chain of Custody
Page 1 of 2
Accutest New Jersey



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D75022 Client: _____ Project: _____
Date / Time Received: 9/12/2015 9:40:00 AM Delivery Method: _____ Airbill #'s: _____

Cooler Temps (Raw Measured) °C: Cooler 1: (2.1);

Cooler Temps (Corrected) °C: Cooler 1: (2.3);

Cooler Security Y or N Y or N
1. Custody Seals Present: 3. COC Present:
2. Custody Seals Intact: 4. Smpl Dates/Time OK

Cooler Temperature Y or N
1. Temp criteria achieved:
2. Cooler temp verification: IR Gun
3. Cooler media: Ice (Bag)
4. No. Coolers: 1

Quality Control Preservation Y or N N/A
1. Trip Blank present / cooler:
2. Trip Blank listed on COC:
3. Samples preserved properly:
4. VOCs headspace free:

Sample Integrity - Documentation		<u>Y or N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Sample Integrity - Condition		<u>Y or N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

Sample Integrity - Instructions		<u>Y or N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
P: 732.329.3499

Dayton, New Jersey
www.accutest.com

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D75022: Chain of Custody

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GC/MS Volatiles

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5628-MB	3C123201.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.2	ug/kg	
71-43-2	Benzene	ND	0.50	0.13	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.16	ug/kg	
75-25-2	Bromoform	ND	5.0	0.24	ug/kg	
74-83-9	Bromomethane	ND	5.0	0.36	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.23	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.23	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.16	ug/kg	
75-00-3	Chloroethane	ND	5.0	0.48	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	25	1.1	ug/kg	
67-66-3	Chloroform	ND	2.0	0.15	ug/kg	
74-87-3	Chloromethane	ND	5.0	0.26	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.21	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.12	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.16	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.23	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.14	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.13	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.78	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.59	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.24	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.12	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.18	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.16	ug/kg	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.46	ug/kg	
75-09-2	Methylene chloride	ND	5.0	0.98	ug/kg	
100-42-5	Styrene	ND	2.0	0.18	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.18	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.30	ug/kg	
108-88-3	Toluene	ND	1.0	0.21	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.15	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.15	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.15	ug/kg	

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Method Blank Summary

Page 2 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5628-MB	3C123201.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Result	RL	MDL	Units	Q
108-05-4	Vinyl Acetate	ND	10	1.8	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.20	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.27	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	93%
17060-07-0	1,2-Dichloroethane-D4	91%
2037-26-5	Toluene-D8	100%
460-00-4	4-Bromofluorobenzene	86%

11.1.1
11

Blank Spike Summary

Page 1 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5628-BS	3C123202.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	50	28.5	57	30-150
71-43-2	Benzene	50	44.7	89	77-122
75-27-4	Bromodichloromethane	50	51.8	104	82-130
75-25-2	Bromoform	50	64.1	128	78-134
74-83-9	Bromomethane	50	46.3	93	56-141
78-93-3	2-Butanone (MEK)	50	46.3	93	61-139
75-15-0	Carbon disulfide	50	40.2	80	68-131
56-23-5	Carbon tetrachloride	50	48.6	97	73-139
108-90-7	Chlorobenzene	50	48.2	96	79-120
75-00-3	Chloroethane	50	50.0	100	64-150
110-75-8	2-Chloroethyl vinyl ether	250	292	117	39-167
67-66-3	Chloroform	50	45.2	90	77-123
74-87-3	Chloromethane	50	38.7	77	50-140
124-48-1	Dibromochloromethane	50	54.2	108	82-129
95-50-1	1,2-Dichlorobenzene	50	50.7	101	79-118
541-73-1	1,3-Dichlorobenzene	50	47.9	96	76-119
106-46-7	1,4-Dichlorobenzene	50	49.3	99	75-118
75-34-3	1,1-Dichloroethane	50	42.5	85	78-129
107-06-2	1,2-Dichloroethane	50	50.4	101	77-140
75-35-4	1,1-Dichloroethene	50	42.4	85	71-128
156-59-2	cis-1,2-Dichloroethene	50	42.5	85	73-123
156-60-5	trans-1,2-Dichloroethene	50	42.4	85	72-122
78-87-5	1,2-Dichloropropane	50	46.4	93	80-129
10061-01-5	cis-1,3-Dichloropropene	50	49.5	99	75-124
10061-02-6	trans-1,3-Dichloropropene	50	49.9	100	75-129
100-41-4	Ethylbenzene	50	48.2	96	75-121
591-78-6	2-Hexanone	50	63.8	128	63-140
108-10-1	4-Methyl-2-pentanone(MIBK)	50	66.5	133	73-141
75-09-2	Methylene chloride	50	43.9	88	71-124
100-42-5	Styrene	50	54.6	109	79-125
79-34-5	1,1,2,2-Tetrachloroethane	50	46.5	93	72-121
127-18-4	Tetrachloroethene	50	48.0	96	70-135
108-88-3	Toluene	50	47.0	94	75-123
71-55-6	1,1,1-Trichloroethane	50	47.3	95	75-134
79-00-5	1,1,2-Trichloroethane	50	53.9	108	78-130
79-01-6	Trichloroethene	50	48.4	97	79-127

* = Outside of Control Limits.

11.2.1
11

Blank Spike Summary

Page 2 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5628-BS	3C123202.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
108-05-4	Vinyl Acetate	50	50.7	101	78-140
75-01-4	Vinyl chloride	50	41.7	83	57-136
1330-20-7	Xylene (total)	150	151	101	76-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	70-122%
17060-07-0	1,2-Dichloroethane-D4	100%	68-124%
2037-26-5	Toluene-D8	102%	77-125%
460-00-4	4-Bromofluorobenzene	87%	72-130%

11.2.1

11

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D75022-11MS	3C123203.D	1	09/15/15	PS	n/a	n/a	V3C5628
D75022-11MSD	3C123204.D	1	09/15/15	PS	n/a	n/a	V3C5628
D75022-11	3C123206.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	D75022-11		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
67-64-1	Acetone	ND		58.7	32.5	55	58.7	36.5	62	12	10-180/33
71-43-2	Benzene	ND		58.7	41.7	71	58.7	45.8	78	9	48-136/30
75-27-4	Bromodichloromethane	ND		58.7	48.6	83	58.7	52.1	89	7	50-145/28
75-25-2	Bromoform	ND		58.7	52.4	89	58.7	53.2	91	2	39-148/24
74-83-9	Bromomethane	ND		58.7	45.1	77	58.7	49.0	84	8	12-156/32
78-93-3	2-Butanone (MEK)	ND		58.7	42.7	73	58.7	40.7	69	5	26-164/30
75-15-0	Carbon disulfide	ND		58.7	37.8	64	58.7	41.4	71	9	34-146/31
56-23-5	Carbon tetrachloride	ND		58.7	42.4	72	58.7	45.7	78	7	43-152/31
108-90-7	Chlorobenzene	ND		58.7	39.8	68	58.7	42.1	72	6	38-144/29
75-00-3	Chloroethane	ND		58.7	50.7	86	58.7	56.9	97	12	26-154/34
110-75-8	2-Chloroethyl vinyl ether	ND		293	281	96	293	292	100	4	23-163/26
67-66-3	Chloroform	ND		58.7	43.1	73	58.7	46.4	79	7	52-134/27
74-87-3	Chloromethane	ND		58.7	41.3	70	58.7	46.0	78	11	41-142/28
124-48-1	Dibromochloromethane	ND		58.7	48.2	82	58.7	51.3	87	6	49-142/24
95-50-1	1,2-Dichlorobenzene	ND		58.7	31.7	54	58.7	31.2	53	2	30-144/30
541-73-1	1,3-Dichlorobenzene	ND		58.7	31.1	53	58.7	30.8	53	1	28-148/31
106-46-7	1,4-Dichlorobenzene	ND		58.7	32.3	55	58.7	32.0	55	1	30-142/31
75-34-3	1,1-Dichloroethane	ND		58.7	41.5	71	58.7	45.1	77	8	54-137/28
107-06-2	1,2-Dichloroethane	ND		58.7	49.5	84	58.7	53.6	91	8	56-140/24
75-35-4	1,1-Dichloroethene	ND		58.7	40.6	69	58.7	44.6	76	9	41-143/30
156-59-2	cis-1,2-Dichloroethene	ND		58.7	40.7	69	58.7	44.6	76	9	45-137/28
156-60-5	trans-1,2-Dichloroethene	ND		58.7	40.6	69	58.7	43.8	75	8	42-141/30
78-87-5	1,2-Dichloropropane	ND		58.7	44.6	76	58.7	49.0	84	9	53-139/27
10061-01-5	cis-1,3-Dichloropropene	ND		58.7	45.6	78	58.7	47.4	81	4	41-144/26
10061-02-6	trans-1,3-Dichloropropene	ND		58.7	45.7	78	58.7	47.8	81	4	36-148/27
100-41-4	Ethylbenzene	ND		58.7	38.4	65	58.7	40.0	68	4	34-145/29
591-78-6	2-Hexanone	ND		58.7	53.5	91	58.7	47.1	80	13	16-176/32
108-10-1	4-Methyl-2-pentanone(MIBK)	ND		58.7	62.5	107	58.7	64.1	109	3	33-154/29
75-09-2	Methylene chloride	ND		58.7	43.8	75	58.7	49.3	84	12	47-133/25
100-42-5	Styrene	ND		58.7	42.1	72	58.7	42.9	73	2	32-156/31
79-34-5	1,1,2,2-Tetrachloroethane	ND		58.7	41.5	71	58.7	42.6	73	3	31-149/25
127-18-4	Tetrachloroethene	ND		58.7	34.8	59	58.7	36.2	62	4	34-163/31
108-88-3	Toluene	ND		58.7	41.1	70	58.7	44.1	75	7	40-141/30
71-55-6	1,1,1-Trichloroethane	ND		58.7	42.8	73	58.7	46.1	79	7	48-144/29
79-00-5	1,1,2-Trichloroethane	ND		58.7	50.4	86	58.7	53.1	91	5	43-146/27
79-01-6	Trichloroethene	ND		58.7	43.2	74	58.7	46.5	79	7	42-152/29

* = Outside of Control Limits.

11.3.1
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Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 2

Job Number: D75022

Account: ALMS Accutest Mountain States

Project: WESTCOL: DUG

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D75022-11MS	3C123203.D	1	09/15/15	PS	n/a	n/a	V3C5628
D75022-11MSD	3C123204.D	1	09/15/15	PS	n/a	n/a	V3C5628
D75022-11	3C123206.D	1	09/15/15	PS	n/a	n/a	V3C5628

The QC reported here applies to the following samples:

Method: SW846 8260C

D75022-11, D75022-12, D75022-13, D75022-14, D75022-15

CAS No.	Compound	D75022-11		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
108-05-4	Vinyl Acetate	ND		58.7	3.3	6* a	58.7	4.0	7* a	19	19-146/37
75-01-4	Vinyl chloride	ND		58.7	44.6	76	58.7	49.6	85	11	38-149/29
1330-20-7	Xylene (total)	ND		176	119	68	176	124	70	4	34-146/29

CAS No.	Surrogate Recoveries	MS	MSD	D75022-11	Limits
1868-53-7	Dibromofluoromethane	97%	97%	100%	70-122%
17060-07-0	1,2-Dichloroethane-D4	101%	98%	108%	68-124%
2037-26-5	Toluene-D8	102%	103%	100%	77-125%
460-00-4	4-Bromofluorobenzene	92%	89%	92%	72-130%

(a) Outside control limits due to matrix interference.

* = Outside of Control Limits.

11.3.1
11



12/15/15

Technical Report for

Weston Solutions, Inc.

Barnum Orchard

Accutest Job Number: D77986

Sampling Date: 12/08/15

Report to:

Weston Solutions, Inc.
1435 Garrison Street
Lakewood, CO 80215
roy.weindorf@westonsolutions.com

ATTN: Roy Weindorf

Total number of pages in report: **27**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink that appears to read "Scott Heideman".

Scott Heideman
Laboratory Director

Client Service contact: Renea Lewis 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY
CO (CO00049), EPA 524.2 Provisional

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Test results relate only to samples analyzed.

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Sample Summary

Weston Solutions, Inc.

Job No: D77986

Barnum Orchard

Sample Number	Collected Date	Time By	Matrix Received	Code Type	Client Sample ID	
D77986-1	12/08/15	09:05 ES	12/08/15	SO	Soil	BO-SO-16-00-02
D77986-2	12/08/15	00:00 ES	12/08/15	SO	Soil	BO-SO-17-00-02
D77986-3	12/08/15	09:25 ES	12/08/15	SO	Soil	BO-SO-18-00-02
D77986-3D	12/08/15	09:25 ES	12/08/15	SO	Soil Dup/MSD	BO-SO-18-00-02
D77986-3M	12/08/15	09:25 ES	12/08/15	SO	Soil Matrix Spike	BO-SO-18-00-02
D77986-4	12/08/15	09:35 ES	12/08/15	SO	Soil	BO-SO-19-00-02
D77986-5	12/08/15	10:25 ES	12/08/15	SO	Soil	FA-SO-21-00-02
D77986-6	12/08/15	00:00 ES	12/08/15	SO	Soil	FA-SO-22-00-02
D77986-7	12/08/15	10:30 ES	12/08/15	SO	Soil	FA-SO-23-00-02
D77986-8	12/08/15	10:32 ES	12/08/15	SO	Soil	FA-SO-24-00-02
D77986-9	12/08/15	10:35 ES	12/08/15	SO	Soil	FA-SO-25-00-02
D77986-9D	12/08/15	10:35 ES	12/08/15	SO	Soil Dup/MSD	FA-SO-25-00-02
D77986-9M	12/08/15	10:35 ES	12/08/15	SO	Soil Matrix Spike	FA-SO-25-00-02

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Weston Solutions, Inc.

Job No D77986

Site: Barnum Orchard

Report Date 12/15/2015 4:17:10 P

On 12/08/2015, 9 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 19.7 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D77986 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Extractables by GCMS By Method SW846 8270C

Matrix: SO

Batch ID: OP12803

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D77986-3MS, D77986-3MSD were used as the QC samples indicated.

Matrix: SO

Batch ID: OP12804

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D77986-9MS, D77986-9MSD were used as the QC samples indicated.

Wet Chemistry By Method SM2540G-2011 M

Matrix: SO

Batch ID: GN32681

- The data for SM2540G-2011 M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

Page 1 of 3

Job Number: D77986

Account: Weston Solutions, Inc.

Project: Barnum Orchard

Collected: 12/08/15

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Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D77986-1 BO-SO-16-00-02						
Benzo(a)anthracene	32.3 J	98	24	ug/kg	SW846 8270C	
Benzo(b)fluoranthene	52.0 J	98	24	ug/kg	SW846 8270C	
Benzo(g,h,i)perylene	37.6 J	98	24	ug/kg	SW846 8270C	
Chrysene	45.7 J	98	29	ug/kg	SW846 8270C	
Fluoranthene	58.9 J	98	24	ug/kg	SW846 8270C	
Pyrene	57.7 J	98	24	ug/kg	SW846 8270C	
D77986-2 BO-SO-17-00-02						
Benzo(a)anthracene	45.4 J	92	23	ug/kg	SW846 8270C	
Benzo(b)fluoranthene	93.1	92	23	ug/kg	SW846 8270C	
Benzo(k)fluoranthene	31.8 J	92	23	ug/kg	SW846 8270C	
Benzo(g,h,i)perylene	69.7 J	92	23	ug/kg	SW846 8270C	
Chrysene	70.1 J	92	28	ug/kg	SW846 8270C	
Fluoranthene	109	92	23	ug/kg	SW846 8270C	
Indeno(1,2,3-cd)pyrene	62.0 J	180	46	ug/kg	SW846 8270C	
Phenanthrene	45.6 J	92	27	ug/kg	SW846 8270C	
Pyrene	98.2	92	23	ug/kg	SW846 8270C	
D77986-3 BO-SO-18-00-02						
Benzo(a)anthracene	67.2 J	100	25	ug/kg	SW846 8270C	
Benzo(b)fluoranthene	112	100	25	ug/kg	SW846 8270C	
Benzo(k)fluoranthene	35.7 J	100	25	ug/kg	SW846 8270C	
Benzo(g,h,i)perylene	77.6 J	100	25	ug/kg	SW846 8270C	
Benzo(a)pyrene	80.0 J	100	25	ug/kg	SW846 8270C	
Chrysene	98.3 J	100	30	ug/kg	SW846 8270C	
Fluoranthene	158	100	25	ug/kg	SW846 8270C	
Indeno(1,2,3-cd)pyrene	72.2 J	200	51	ug/kg	SW846 8270C	
Phenanthrene	78.8 J	100	30	ug/kg	SW846 8270C	
Pyrene	140	100	25	ug/kg	SW846 8270C	
D77986-4 BO-SO-19-00-02						
Benzo(a)anthracene	57.9 J	96	24	ug/kg	SW846 8270C	
Benzo(b)fluoranthene	99.6	96	24	ug/kg	SW846 8270C	
Benzo(k)fluoranthene	38.4 J	96	24	ug/kg	SW846 8270C	
Benzo(g,h,i)perylene	68.2 J	96	24	ug/kg	SW846 8270C	
Chrysene	73.5 J	96	29	ug/kg	SW846 8270C	
Fluoranthene	119	96	24	ug/kg	SW846 8270C	
Indeno(1,2,3-cd)pyrene	60.0 J	190	48	ug/kg	SW846 8270C	
Phenanthrene	47.9 J	96	28	ug/kg	SW846 8270C	
Pyrene	110	96	24	ug/kg	SW846 8270C	

Summary of Hits

Page 2 of 3

Job Number: D77986
Account: Weston Solutions, Inc.
Project: Barnum Orchard
Collected: 12/08/15

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Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D77986-5 FA-SO-21-00-02

Anthracene	29.5 J	83	24	ug/kg	SW846 8270C
Benzo(a)anthracene	155	83	21	ug/kg	SW846 8270C
Benzo(b)fluoranthene	201	83	21	ug/kg	SW846 8270C
Benzo(k)fluoranthene	78.1 J	83	21	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	103	83	21	ug/kg	SW846 8270C
Benzo(a)pyrene	157	83	21	ug/kg	SW846 8270C
Chrysene	170	83	25	ug/kg	SW846 8270C
Dibenz(a,h)anthracene	25.0 J	83	21	ug/kg	SW846 8270C
Fluoranthene	322	83	21	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	122 J	170	41	ug/kg	SW846 8270C
Phenanthrene	110	83	24	ug/kg	SW846 8270C
Pyrene	268	83	21	ug/kg	SW846 8270C

D77986-6 FA-SO-22-00-02

Anthracene	29.1 J	89	26	ug/kg	SW846 8270C
Benzo(a)anthracene	129	89	22	ug/kg	SW846 8270C
Benzo(b)fluoranthene	194	89	22	ug/kg	SW846 8270C
Benzo(k)fluoranthene	66.0 J	89	22	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	115	89	22	ug/kg	SW846 8270C
Benzo(a)pyrene	156	89	22	ug/kg	SW846 8270C
Chrysene	152	89	27	ug/kg	SW846 8270C
Dibenz(a,h)anthracene	25.4 J	89	22	ug/kg	SW846 8270C
Fluoranthene	228	89	22	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	125 J	180	45	ug/kg	SW846 8270C
Phenanthrene	96.5	89	26	ug/kg	SW846 8270C
Pyrene	210	89	22	ug/kg	SW846 8270C

D77986-7 FA-SO-23-00-02

Benzo(a)anthracene	64.5 J	87	22	ug/kg	SW846 8270C
Benzo(b)fluoranthene	107	87	22	ug/kg	SW846 8270C
Benzo(k)fluoranthene	38.6 J	87	22	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	68.9 J	87	22	ug/kg	SW846 8270C
Benzo(a)pyrene	76.3 J	87	22	ug/kg	SW846 8270C
Chrysene	85.5 J	87	26	ug/kg	SW846 8270C
Fluoranthene	129	87	22	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	69.1 J	170	43	ug/kg	SW846 8270C
Phenanthrene	54.9 J	87	26	ug/kg	SW846 8270C
Pyrene	123	87	22	ug/kg	SW846 8270C

Summary of Hits

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Job Number: D77986
Account: Weston Solutions, Inc.
Project: Barnum Orchard
Collected: 12/08/15

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Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D77986-8 FA-SO-24-00-02

Benzo(a)anthracene	67.0 J	90	22	ug/kg	SW846 8270C
Benzo(b)fluoranthene	125	90	22	ug/kg	SW846 8270C
Benzo(k)fluoranthene	34.7 J	90	22	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	73.0 J	90	22	ug/kg	SW846 8270C
Benzo(a)pyrene	85.5 J	90	22	ug/kg	SW846 8270C
Chrysene	98.9	90	27	ug/kg	SW846 8270C
Fluoranthene	142	90	22	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	78.8 J	180	45	ug/kg	SW846 8270C
Phenanthrene	50.5 J	90	26	ug/kg	SW846 8270C
Pyrene	128	90	22	ug/kg	SW846 8270C

D77986-9 FA-SO-25-00-02

Benzo(a)anthracene	64.6 J	100	26	ug/kg	SW846 8270C
Benzo(b)fluoranthene	103	100	26	ug/kg	SW846 8270C
Benzo(k)fluoranthene	36.6 J	100	26	ug/kg	SW846 8270C
Benzo(g,h,i)perylene	63.3 J	100	26	ug/kg	SW846 8270C
Benzo(a)pyrene	75.4 J	100	26	ug/kg	SW846 8270C
Chrysene	82.1 J	100	31	ug/kg	SW846 8270C
Fluoranthene	125	100	26	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	60.9 J	210	52	ug/kg	SW846 8270C
Phenanthrene	46.8 J	100	31	ug/kg	SW846 8270C
Pyrene	118	100	26	ug/kg	SW846 8270C



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Sample Results

Report of Analysis

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Client Sample ID:	BO-SO-16-00-02	Date Sampled:	12/08/15
Lab Sample ID:	D77986-1	Date Received:	12/08/15
Matrix:	SO - Soil	Percent Solids:	68.2
Method:	SW846 8270C SW846 3546		
Project:	Barnum Orchard		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G127403.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	98	37	ug/kg	
208-96-8	Acenaphthylene	ND	98	37	ug/kg	
120-12-7	Anthracene	ND	98	28	ug/kg	
56-55-3	Benzo(a)anthracene	32.3	98	24	ug/kg	J
205-99-2	Benzo(b)fluoranthene	52.0	98	24	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	98	24	ug/kg	
191-24-2	Benzo(g,h,i)perylene	37.6	98	24	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	98	24	ug/kg	
218-01-9	Chrysene	45.7	98	29	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	98	24	ug/kg	
206-44-0	Fluoranthene	58.9	98	24	ug/kg	J
86-73-7	Fluorene	ND	98	32	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	200	49	ug/kg	
90-12-0	1-Methylnaphthalene	ND	98	37	ug/kg	
91-57-6	2-Methylnaphthalene	ND	98	38	ug/kg	
91-20-3	Naphthalene	ND	98	40	ug/kg	
85-01-8	Phenanthrene	ND	98	29	ug/kg	
129-00-0	Pyrene	57.7	98	24	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	68%		30-130%
4165-60-0	Nitrobenzene-d5	61%		19-130%
1718-51-0	Terphenyl-d14	90%		40-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.1

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Report of Analysis

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4.2
4**Client Sample ID:** BO-SO-17-00-02**Lab Sample ID:** D77986-2**Date Sampled:** 12/08/15**Matrix:** SO - Soil**Date Received:** 12/08/15**Method:** SW846 8270C SW846 3546**Percent Solids:** 72.2**Project:** Barnum Orchard

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G127404.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	92	35	ug/kg	
208-96-8	Acenaphthylene	ND	92	35	ug/kg	
120-12-7	Anthracene	ND	92	27	ug/kg	
56-55-3	Benzo(a)anthracene	45.4	92	23	ug/kg	J
205-99-2	Benzo(b)fluoranthene	93.1	92	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	31.8	92	23	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	69.7	92	23	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	92	23	ug/kg	
218-01-9	Chrysene	70.1	92	28	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	92	23	ug/kg	
206-44-0	Fluoranthene	109	92	23	ug/kg	
86-73-7	Fluorene	ND	92	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	62.0	180	46	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	92	35	ug/kg	
91-57-6	2-Methylnaphthalene	ND	92	36	ug/kg	
91-20-3	Naphthalene	ND	92	38	ug/kg	
85-01-8	Phenanthrene	45.6	92	27	ug/kg	J
129-00-0	Pyrene	98.2	92	23	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	65%		30-130%
4165-60-0	Nitrobenzene-d5	63%		19-130%
1718-51-0	Terphenyl-d14	78%		40-130%

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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4.3
4

Client Sample ID:	BO-SO-18-00-02	Date Sampled:	12/08/15
Lab Sample ID:	D77986-3	Date Received:	12/08/15
Matrix:	SO - Soil	Percent Solids:	65.7
Method:	SW846 8270C SW846 3546		
Project:	Barnum Orchard		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G127400.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	100	39	ug/kg	
208-96-8	Acenaphthylene	ND	100	39	ug/kg	
120-12-7	Anthracene	ND	100	29	ug/kg	
56-55-3	Benzo(a)anthracene	67.2	100	25	ug/kg	J
205-99-2	Benzo(b)fluoranthene	112	100	25	ug/kg	
207-08-9	Benzo(k)fluoranthene	35.7	100	25	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	77.6	100	25	ug/kg	J
50-32-8	Benzo(a)pyrene	80.0	100	25	ug/kg	J
218-01-9	Chrysene	98.3	100	30	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	100	25	ug/kg	
206-44-0	Fluoranthene	158	100	25	ug/kg	
86-73-7	Fluorene	ND	100	33	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	72.2	200	51	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	100	39	ug/kg	
91-57-6	2-Methylnaphthalene	ND	100	40	ug/kg	
91-20-3	Naphthalene	ND	100	42	ug/kg	
85-01-8	Phenanthrene	78.8	100	30	ug/kg	J
129-00-0	Pyrene	140	100	25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	69%		30-130%
4165-60-0	Nitrobenzene-d5	66%		19-130%
1718-51-0	Terphenyl-d14	83%		40-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

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Client Sample ID:	BO-SO-19-00-02	Date Sampled:	12/08/15
Lab Sample ID:	D77986-4	Date Received:	12/08/15
Matrix:	SO - Soil	Percent Solids:	68.9
Method:	SW846 8270C SW846 3546		
Project:	Barnum Orchard		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G127405.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	96	37	ug/kg	
208-96-8	Acenaphthylene	ND	96	37	ug/kg	
120-12-7	Anthracene	ND	96	28	ug/kg	
56-55-3	Benzo(a)anthracene	57.9	96	24	ug/kg	J
205-99-2	Benzo(b)fluoranthene	99.6	96	24	ug/kg	
207-08-9	Benzo(k)fluoranthene	38.4	96	24	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	68.2	96	24	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	96	24	ug/kg	
218-01-9	Chrysene	73.5	96	29	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	96	24	ug/kg	
206-44-0	Fluoranthene	119	96	24	ug/kg	
86-73-7	Fluorene	ND	96	32	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	60.0	190	48	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	96	37	ug/kg	
91-57-6	2-Methylnaphthalene	ND	96	38	ug/kg	
91-20-3	Naphthalene	ND	96	40	ug/kg	
85-01-8	Phenanthrene	47.9	96	28	ug/kg	J
129-00-0	Pyrene	110	96	24	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	75%		30-130%
4165-60-0	Nitrobenzene-d5	71%		19-130%
1718-51-0	Terphenyl-d14	92%		40-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	FA-SO-21-00-02	Date Sampled:	12/08/15
Lab Sample ID:	D77986-5	Date Received:	12/08/15
Matrix:	SO - Soil	Percent Solids:	80.8
Method:	SW846 8270C SW846 3546		
Project:	Barnum Orchard		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G127406.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	83	31	ug/kg	
208-96-8	Acenaphthylene	ND	83	31	ug/kg	
120-12-7	Anthracene	29.5	83	24	ug/kg	
56-55-3	Benzo(a)anthracene	155	83	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	201	83	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	78.1	83	21	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	103	83	21	ug/kg	
50-32-8	Benzo(a)pyrene	157	83	21	ug/kg	
218-01-9	Chrysene	170	83	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	25.0	83	21	ug/kg	J
206-44-0	Fluoranthene	322	83	21	ug/kg	
86-73-7	Fluorene	ND	83	27	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	122	170	41	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	83	31	ug/kg	
91-57-6	2-Methylnaphthalene	ND	83	32	ug/kg	
91-20-3	Naphthalene	ND	83	34	ug/kg	
85-01-8	Phenanthrene	110	83	24	ug/kg	
129-00-0	Pyrene	268	83	21	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	61%		30-130%
4165-60-0	Nitrobenzene-d5	54%		19-130%
1718-51-0	Terphenyl-d14	88%		40-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

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4.6
4**Client Sample ID:** FA-SO-22-00-02**Lab Sample ID:** D77986-6**Date Sampled:** 12/08/15**Matrix:** SO - Soil**Date Received:** 12/08/15**Method:** SW846 8270C SW846 3546**Percent Solids:** 74.5**Project:** Barnum Orchard

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G127407.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	89	34	ug/kg	
208-96-8	Acenaphthylene	ND	89	34	ug/kg	
120-12-7	Anthracene	29.1	89	26	ug/kg	J
56-55-3	Benzo(a)anthracene	129	89	22	ug/kg	
205-99-2	Benzo(b)fluoranthene	194	89	22	ug/kg	
207-08-9	Benzo(k)fluoranthene	66.0	89	22	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	115	89	22	ug/kg	
50-32-8	Benzo(a)pyrene	156	89	22	ug/kg	
218-01-9	Chrysene	152	89	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	25.4	89	22	ug/kg	J
206-44-0	Fluoranthene	228	89	22	ug/kg	
86-73-7	Fluorene	ND	89	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	125	180	45	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	89	34	ug/kg	
91-57-6	2-Methylnaphthalene	ND	89	35	ug/kg	
91-20-3	Naphthalene	ND	89	37	ug/kg	
85-01-8	Phenanthrene	96.5	89	26	ug/kg	
129-00-0	Pyrene	210	89	22	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	61%		30-130%
4165-60-0	Nitrobenzene-d5	54%		19-130%
1718-51-0	Terphenyl-d14	83%		40-130%

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	FA-SO-23-00-02	Date Sampled:	12/08/15
Lab Sample ID:	D77986-7	Date Received:	12/08/15
Matrix:	SO - Soil	Percent Solids:	76.4
Method:	SW846 8270C SW846 3546		
Project:	Barnum Orchard		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G127408.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	87	33	ug/kg	
208-96-8	Acenaphthylene	ND	87	33	ug/kg	
120-12-7	Anthracene	ND	87	25	ug/kg	
56-55-3	Benzo(a)anthracene	64.5	87	22	ug/kg	J
205-99-2	Benzo(b)fluoranthene	107	87	22	ug/kg	
207-08-9	Benzo(k)fluoranthene	38.6	87	22	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	68.9	87	22	ug/kg	J
50-32-8	Benzo(a)pyrene	76.3	87	22	ug/kg	J
218-01-9	Chrysene	85.5	87	26	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	87	22	ug/kg	
206-44-0	Fluoranthene	129	87	22	ug/kg	
86-73-7	Fluorene	ND	87	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	69.1	170	43	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	87	33	ug/kg	
91-57-6	2-Methylnaphthalene	ND	87	34	ug/kg	
91-20-3	Naphthalene	ND	87	36	ug/kg	
85-01-8	Phenanthrene	54.9	87	26	ug/kg	J
129-00-0	Pyrene	123	87	22	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	80%		30-130%
4165-60-0	Nitrobenzene-d5	76%		19-130%
1718-51-0	Terphenyl-d14	92%		40-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

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Client Sample ID:	FA-SO-24-00-02	Date Sampled:	12/08/15
Lab Sample ID:	D77986-8	Date Received:	12/08/15
Matrix:	SO - Soil	Percent Solids:	74.2
Method:	SW846 8270C SW846 3546		
Project:	Barnum Orchard		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G127409.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	90	34	ug/kg	
208-96-8	Acenaphthylene	ND	90	34	ug/kg	
120-12-7	Anthracene	ND	90	26	ug/kg	
56-55-3	Benzo(a)anthracene	67.0	90	22	ug/kg	J
205-99-2	Benzo(b)fluoranthene	125	90	22	ug/kg	
207-08-9	Benzo(k)fluoranthene	34.7	90	22	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	73.0	90	22	ug/kg	J
50-32-8	Benzo(a)pyrene	85.5	90	22	ug/kg	J
218-01-9	Chrysene	98.9	90	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	90	22	ug/kg	
206-44-0	Fluoranthene	142	90	22	ug/kg	
86-73-7	Fluorene	ND	90	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	78.8	180	45	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	90	34	ug/kg	
91-57-6	2-Methylnaphthalene	ND	90	35	ug/kg	
91-20-3	Naphthalene	ND	90	37	ug/kg	
85-01-8	Phenanthrene	50.5	90	26	ug/kg	J
129-00-0	Pyrene	128	90	22	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	59%		30-130%
4165-60-0	Nitrobenzene-d5	55%		19-130%
1718-51-0	Terphenyl-d14	79%		40-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

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Client Sample ID:	FA-SO-25-00-02	Date Sampled:	12/08/15
Lab Sample ID:	D77986-9	Date Received:	12/08/15
Matrix:	SO - Soil	Percent Solids:	63.5
Method:	SW846 8270C SW846 3546		
Project:	Barnum Orchard		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G127397.D	1	12/10/15	DC	12/09/15	OP12804	E1G1714
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	100	40	ug/kg	
208-96-8	Acenaphthylene	ND	100	40	ug/kg	
120-12-7	Anthracene	ND	100	30	ug/kg	
56-55-3	Benzo(a)anthracene	64.6	100	26	ug/kg	J
205-99-2	Benzo(b)fluoranthene	103	100	26	ug/kg	
207-08-9	Benzo(k)fluoranthene	36.6	100	26	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	63.3	100	26	ug/kg	J
50-32-8	Benzo(a)pyrene	75.4	100	26	ug/kg	J
218-01-9	Chrysene	82.1	100	31	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	100	26	ug/kg	
206-44-0	Fluoranthene	125	100	26	ug/kg	
86-73-7	Fluorene	ND	100	35	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	60.9	210	52	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	100	40	ug/kg	
91-57-6	2-Methylnaphthalene	ND	100	41	ug/kg	
91-20-3	Naphthalene	ND	100	43	ug/kg	
85-01-8	Phenanthrene	46.8	100	31	ug/kg	J
129-00-0	Pyrene	118	100	26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	55%		30-130%
4165-60-0	Nitrobenzene-d5	51%		19-130%
1718-51-0	Terphenyl-d14	79%		40-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound



Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

PAGE 1 OF 1

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

FED-EX Tracking #	Botte Order Control #
Accidental Quote #	Accidental Job #
D77956	
Requested Analysis (see TEST CODE sheet)	
Matrix Codes	

Client / Reporting Information		Project Information				Requested Analysis (see TEST CODE sheet)				Matrix Codes			
Company Name Weston Solutions		Project Name Barnum Orchard								DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sediment SE - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Pipe FB - Field Blank RB - Rinse Blank TB - Trip Blank			
Street Address 1435 Garrison St. Ste 100		Street: Lakewood Co 80215		City:		Billing Information (If different from Report to)							
City Lakewood Co	State CO	Zip 80215	City:	City:	State:	Company Name							
Project Contact Ray Weindorf	E-mail Ray.Weindorf@westonsolutions.com	Project# 	Street Address										
Phone# 303-729-6100	Fax# 	Client PO# 	City		State	Zip							
Sampler(s) Name(s) Eric Sandusky	Phone #	Project Manager 	Attention:		PO#								
Acidic Sample #	Field ID / Point of Collection	Collection			# of bottles	Number of preserved bottles						LAB USE ONLY	
		Date 12/14	Time 0855	Sampled by ES		Matrix	HCl	NH3-N	Hg/C4	PCP	Mer-CH		PCP/ONE
BO-SO-16-00-02					X							01	
BO-SO-07-00-02		0000				X						02	
BO-SO-08-00-02		0925		3			X					03	
BO-SO-19-00-02		0935			X							04	
FA-SO-21-00-02		1025			X							05	
FA-SO-22-00-02		0000			X							06	
FA-SO-23-00-02		1030			X							07	
FA-SO-24-00-02		1032			X							08	
FA-SO-25-00-02		1035		2	X							09	
<hr/>													<i>PBS</i>
Data Deliverable Information													Comments / Special Instructions

Turnaround Time (Business days)		Approved By (Accutest PM) / Date:	Data Universe Information			
<input type="checkbox"/> Std. 10 Business Days			<input type="checkbox"/> Commercial "A" (Level 1)	<input type="checkbox"/> State Forms		
<input checked="" type="checkbox"/> Std. 5 Business Days (By Contract only)			<input checked="" type="checkbox"/> Commercial "B" (Level 2)	<input checked="" type="checkbox"/> EDD Format <i>Spec. Sub.</i>	<i>MS/MSD on DO SO-18-00-02</i>	
<input type="checkbox"/> 5 Day EMERGENC			<input type="checkbox"/> Commercial "B" + Narrative	<input type="checkbox"/> PDF	<i>and FA SO-25-00-02</i>	
<input type="checkbox"/> 3 Day EMERGENC			<input type="checkbox"/> FULLTI (Level 3+4)			
<input type="checkbox"/> 2 Day EMERGENC						
<input type="checkbox"/> 1 Day EMERGENC						
Emergency & Rush T/A data available VIA LabLink		Commercial "A" = Results Only Commercial "B" = Results + QC Summary				
Sample Custody must be documented below each time samples change possession, including courier delivery.						
Relinquished by Sampler:	Date/Time:	Received By:	Relinquished By:	Date/Time:	Received By:	
<i>Jen H</i>	<i>10/25/15</i>	<i>1</i>	<i>128-15 14:22</i>	<i>2</i>	<i>2</i>	
Bellmouthing by Sampler:	Date/Time:	Received By:	Relinquished By:	Date/Time:	Received By:	
<i>3</i>		<i>3</i>	<i>4</i>		<i>4</i>	<i>T0820</i>
Relinquished by:	Date/Time:	Received By:	Custody Seal #	Intact	Preserved where applicable	On Ice
<i>5</i>		<i>5</i>	<i>HD</i>	<input type="checkbox"/> Not intact	<i>B</i>	<input type="checkbox"/>
Courier Temp: <i>19.7</i>						

D77986: Chain of Custody
Page 1 of 2



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D77986

Client: WESTON SOLUTIONS

Project: BARNUM ORCHARD

Date / Time Received: 12/8/2015 2:25:00 PM

Delivery Method:

Airbill #'s: hd

Cooler Temps (Initial/Adjusted): #1: (19.7/19.7);

Cooler Security

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun; | |
| 3. Cooler media: | Ice (Bag) | |
| 4. No. Coolers: | 1 | |

Quality Control Preservation

- | | | | |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. VOCs headspace free: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

Sample Integrity - Documentation**Y or N**

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition**Y or N**

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recv'd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions**Y or N N/A**

- | | | |
|---|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Sufficient volume recv'd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> |

Accutest Laboratories
V:(303) 425-60214036 Youngfield Street
F: (303) 425-6854Wheat Ridge, CO
www.accutest.com

5.1

5

D77986: Chain of Custody**Page 2 of 2**



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Page 1 of 1

Job Number: D77986

Account: WESTCOL Weston Solutions, Inc.

Project: Barnum Orchard

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12803-MB	1G127393.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714

The QC reported here applies to the following samples:

Method: SW846 8270C

D77986-1, D77986-2, D77986-3, D77986-4, D77986-5, D77986-6, D77986-7, D77986-8

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	67	25	ug/kg	
208-96-8	Acenaphthylene	ND	67	25	ug/kg	
120-12-7	Anthracene	ND	67	19	ug/kg	
56-55-3	Benzo(a)anthracene	ND	67	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	67	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	67	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	67	17	ug/kg	
50-32-8	Benzo(a)pyrene	ND	67	17	ug/kg	
218-01-9	Chrysene	ND	67	20	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	67	17	ug/kg	
206-44-0	Fluoranthene	ND	67	17	ug/kg	
86-73-7	Fluorene	ND	67	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	130	33	ug/kg	
90-12-0	1-Methylnaphthalene	ND	67	25	ug/kg	
91-57-6	2-Methylnaphthalene	ND	67	26	ug/kg	
91-20-3	Naphthalene	ND	67	27	ug/kg	
85-01-8	Phenanthrene	ND	67	20	ug/kg	
129-00-0	Pyrene	ND	67	17	ug/kg	

CAS No.	Surrogate Recoveries	Limits
321-60-8	2-Fluorobiphenyl	90% 30-130%
367-12-4	2-Fluorophenol	90% 16-130%
4165-60-0	Nitrobenzene-d5	94% 19-130%
4165-62-2	Phenol-d5	91% 18-130%
1718-51-0	Terphenyl-d14	94% 40-130%
118-79-6	2,4,6-Tribromophenol	99% 17-130%

Method Blank Summary

Page 1 of 1

Job Number: D77986

Account: WESTCOL Weston Solutions, Inc.

Project: Barnum Orchard

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12804-MB	1G127395.D	1	12/10/15	DC	12/09/15	OP12804	E1G1714

The QC reported here applies to the following samples:

Method: SW846 8270C

D77986-9

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	67	25	ug/kg	
208-96-8	Acenaphthylene	ND	67	25	ug/kg	
120-12-7	Anthracene	ND	67	19	ug/kg	
56-55-3	Benzo(a)anthracene	ND	67	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	67	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	67	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	67	17	ug/kg	
50-32-8	Benzo(a)pyrene	ND	67	17	ug/kg	
218-01-9	Chrysene	ND	67	20	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	67	17	ug/kg	
206-44-0	Fluoranthene	ND	67	17	ug/kg	
86-73-7	Fluorene	ND	67	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	130	33	ug/kg	
90-12-0	1-Methylnaphthalene	ND	67	25	ug/kg	
91-57-6	2-Methylnaphthalene	ND	67	26	ug/kg	
91-20-3	Naphthalene	ND	67	27	ug/kg	
85-01-8	Phenanthrene	ND	67	20	ug/kg	
129-00-0	Pyrene	ND	67	17	ug/kg	

CAS No.	Surrogate Recoveries	Limits
321-60-8	2-Fluorobiphenyl	90% 30-130%
4165-60-0	Nitrobenzene-d5	92% 19-130%
1718-51-0	Terphenyl-d14	97% 40-130%

Blank Spike Summary

Page 1 of 1

Job Number: D77986

Account: WESTCOL Weston Solutions, Inc.

Project: Barnum Orchard

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12803-BS	1G127394.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714

The QC reported here applies to the following samples:

Method: SW846 8270C

D77986-1, D77986-2, D77986-3, D77986-4, D77986-5, D77986-6, D77986-7, D77986-8

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	1670	1600	96	58-130
208-96-8	Acenaphthylene	1670	1570	94	58-130
120-12-7	Anthracene	1670	1640	98	67-130
56-55-3	Benzo(a)anthracene	1670	1640	98	63-130
205-99-2	Benzo(b)fluoranthene	1670	1650	99	42-157
207-08-9	Benzo(k)fluoranthene	1670	1630	98	38-175
191-24-2	Benzo(g,h,i)perylene	1670	1640	98	49-152
50-32-8	Benzo(a)pyrene	1670	1660	100	47-155
218-01-9	Chrysene	1670	1550	93	68-130
53-70-3	Dibenz(a,h)anthracene	1670	1700	102	48-152
206-44-0	Fluoranthene	1670	1650	99	64-130
86-73-7	Fluorene	1670	1590	95	58-130
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1740	104	45-153
90-12-0	1-Methylnaphthalene	1670	1540	92	55-130
91-57-6	2-Methylnaphthalene	1670	1520	91	54-130
91-20-3	Naphthalene	1670	1550	93	53-130
85-01-8	Phenanthrene	1670	1620	97	66-130
129-00-0	Pyrene	1670	1640	98	68-130

CAS No.	Surrogate Recoveries	BSP	Limits
321-60-8	2-Fluorobiphenyl	92%	30-130%
367-12-4	2-Fluorophenol	91%	16-130%
4165-60-0	Nitrobenzene-d5	94%	19-130%
4165-62-2	Phenol-d5	93%	18-130%
1718-51-0	Terphenyl-d14	95%	40-130%
118-79-6	2,4,6-Tribromophenol	106%	17-130%

* = Outside of Control Limits.

6.2.1
6

Blank Spike Summary

Page 1 of 1

Job Number: D77986

Account: WESTCOL Weston Solutions, Inc.

Project: Barnum Orchard

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12804-BS	1G127396.D	1	12/10/15	DC	12/09/15	OP12804	E1G1714

The QC reported here applies to the following samples:

Method: SW846 8270C

D77986-9

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	1670	1750	105	58-130
208-96-8	Acenaphthylene	1670	1700	102	58-130
120-12-7	Anthracene	1670	1780	107	67-130
56-55-3	Benzo(a)anthracene	1670	1800	108	63-130
205-99-2	Benzo(b)fluoranthene	1670	1780	107	42-157
207-08-9	Benzo(k)fluoranthene	1670	1790	107	38-175
191-24-2	Benzo(g,h,i)perylene	1670	1770	106	49-152
50-32-8	Benzo(a)pyrene	1670	1810	109	47-155
218-01-9	Chrysene	1670	1720	103	68-130
53-70-3	Dibenz(a,h)anthracene	1670	1850	111	48-152
206-44-0	Fluoranthene	1670	1790	107	64-130
86-73-7	Fluorene	1670	1740	104	58-130
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1850	111	45-153
90-12-0	1-Methylnaphthalene	1670	1680	101	55-130
91-57-6	2-Methylnaphthalene	1670	1660	100	54-130
91-20-3	Naphthalene	1670	1650	99	53-130
85-01-8	Phenanthrene	1670	1760	106	66-130
129-00-0	Pyrene	1670	1830	110	68-130

CAS No.	Surrogate Recoveries	BSP	Limits
321-60-8	2-Fluorobiphenyl	99%	30-130%
4165-60-0	Nitrobenzene-d5	101%	19-130%
1718-51-0	Terphenyl-d14	105%	40-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D77986

Account: WESTCOL Weston Solutions, Inc.

Project: Barnum Orchard

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12804-MS	1G127398.D	1	12/10/15	DC	12/09/15	OP12804	E1G1714
OP12804-MSD	1G127399.D	1	12/10/15	DC	12/09/15	OP12804	E1G1714
D77986-9	1G127397.D	1	12/10/15	DC	12/09/15	OP12804	E1G1714

The QC reported here applies to the following samples:

Method: SW846 8270C

D77986-9

CAS No.	Compound	D77986-9		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
83-32-9	Acenaphthene	ND		2620	1520	58	2620	1600	61	5	36-130/30
208-96-8	Acenaphthylene	ND		2620	1560	60	2620	1650	63	6	10-150/30
120-12-7	Anthracene	ND		2620	1970	75	2620	2180	83	10	50-130/30
56-55-3	Benzo(a)anthracene	64.6	J	2620	2140	79	2620	2320	86	8	41-130/30
205-99-2	Benzo(b)fluoranthene	103		2620	2220	81	2620	2340	85	5	29-152/30
207-08-9	Benzo(k)fluoranthene	36.6	J	2620	2120	80	2620	2320	87	9	14-175/30
191-24-2	Benzo(g,h,i)perylene	63.3	J	2620	2150	80	2620	2280	84	6	15-164/30
50-32-8	Benzo(a)pyrene	75.4	J	2620	2160	80	2620	2330	86	8	27-151/30
218-01-9	Chrysene	82.1	J	2620	2100	77	2620	2220	81	6	46-130/30
53-70-3	Dibenz(a,h)anthracene	ND		2620	2170	83	2620	2350	90	8	31-152/30
206-44-0	Fluoranthene	125		2620	2260	82	2620	2400	87	6	53-130/30
86-73-7	Fluorene	ND		2620	1730	66	2620	1850	70	7	24-134/30
193-39-5	Indeno(1,2,3-cd)pyrene	60.9	J	2620	2260	84	2620	2410	90	6	26-153/30
90-12-0	1-Methylnaphthalene	ND		2620	1400	54	2620	1470	56	5	21-130/30
91-57-6	2-Methylnaphthalene	ND		2620	1390	53	2620	1450	55	4	10-148/30
91-20-3	Naphthalene	ND		2620	1300	50	2620	1370	52	5	27-130/30
85-01-8	Phenanthrene	46.8	J	2620	1990	74	2620	2190	82	10	38-130/30
129-00-0	Pyrene	118		2620	2270	82	2620	2410	87	6	53-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D77986-9	Limits
321-60-8	2-Fluorobiphenyl	54%	55%	55%	30-130%
4165-60-0	Nitrobenzene-d5	48%	52%	51%	19-130%
1718-51-0	Terphenyl-d14	78%	86%	79%	40-130%

* = Outside of Control Limits.

6.3.1
6

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D77986

Account: WESTCOL Weston Solutions, Inc.

Project: Barnum Orchard

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12803-MS	1G127401.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714
OP12803-MSD	1G127402.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714
D77986-3	1G127400.D	1	12/10/15	DC	12/09/15	OP12803	E1G1714

The QC reported here applies to the following samples:

Method: SW846 8270C

D77986-1, D77986-2, D77986-3, D77986-4, D77986-5, D77986-6, D77986-7, D77986-8

CAS No.	Compound	D77986-3		Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
		ug/kg	Q								
83-32-9	Acenaphthene	ND		2540	1620	64	2540	1690	67	4	36-130/30
208-96-8	Acenaphthylene	ND		2540	1670	66	2540	1760	69	5	10-150/30
120-12-7	Anthracene	ND		2540	1950	77	2540	2030	80	4	50-130/30
56-55-3	Benzo(a)anthracene	67.2	J	2540	2010	77	2540	2110	81	5	41-130/30
205-99-2	Benzo(b)fluoranthene	112		2540	2070	77	2540	2170	81	5	29-152/30
207-08-9	Benzo(k)fluoranthene	35.7	J	2540	1970	76	2540	2070	80	5	14-175/30
191-24-2	Benzo(g,h,i)perylene	77.6	J	2540	2000	76	2540	2120	81	6	15-164/30
50-32-8	Benzo(a)pyrene	80.0	J	2540	2020	76	2540	2140	81	6	27-151/30
218-01-9	Chrysene	98.3	J	2540	1940	73	2540	2060	77	6	46-130/30
53-70-3	Dibenz(a,h)anthracene	ND		2540	2050	81	2540	2090	82	2	31-152/30
206-44-0	Fluoranthene	158		2540	2100	77	2540	2180	80	4	53-130/30
86-73-7	Fluorene	ND		2540	1800	71	2540	1880	74	4	24-134/30
193-39-5	Indeno(1,2,3-cd)pyrene	72.2	J	2540	2110	80	2540	2200	84	4	26-153/30
90-12-0	1-Methylnaphthalene	ND		2540	1580	62	2540	1650	65	4	21-130/30
91-57-6	2-Methylnaphthalene	ND		2540	1560	61	2540	1650	65	6	10-148/30
91-20-3	Naphthalene	ND		2540	1490	59	2540	1540	61	3	27-130/30
85-01-8	Phenanthrene	78.8	J	2540	1960	74	2540	2040	77	4	38-130/30
129-00-0	Pyrene	140		2540	2150	79	2540	2280	84	6	53-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D77986-3	Limits
321-60-8	2-Fluorobiphenyl	60%	65%	69%	30-130%
367-12-4	2-Fluorophenol	47%	49%		16-130%
4165-60-0	Nitrobenzene-d5	58%	60%	66%	19-130%
4165-62-2	Phenol-d5	54%	57%		18-130%
1718-51-0	Terphenyl-d14	75%	82%	83%	40-130%
118-79-6	2,4,6-Tribromophenol	75%	83%		17-130%

* = Outside of Control Limits.

6.3.2
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